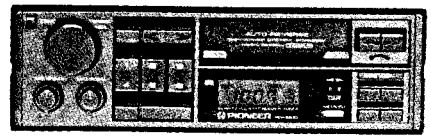
Service Manual

PIONEER

V15



The photo the model KEH-8830.

ORDER NO.
CRT-478-0

CASSETTE CAR STEREO WITH ELECTRONIC TUNER

KEH-8830SDK WG

KEH-8830 EW

KEH-8800 ES

Note:

- See the separate manual CRT-467 for the cassette mechanism unit (CX-152/B).

SPECIFICATIONS

General

Power source . . . . . 14.4V DC (10.8–15.6V allowable)
Grounding system . . . . . Negative type
Max. current consumption 5A
KEH-8830SDK
Dimensions (chassis) . . . . . 180(W) x 50(H)x 160(D)mm
(front face) . . . . . 188(W) x 58(H) x 10(D)mm
Weight 1.7kg
KEH-8830, KEH-8800
Dimensions (chassis) . . . . . 180(W) x 50(H) x 150(D)mm
(front face) . . . . . 188(W) x 58(H) x 10(D)mm
Weight 1.6kg

Amplifier

Maximum power output . . . . . 20W + 20W
Continuous power output . . . . . 13W+13W (1% dist. at 1kHz)
Load impedance . . . . . 4Ω (4–8Ω allowable)
Max. output level/output impedance (pre out) 200mV/2kΩ
Tone controls (bass) . . . . . ±10dB (100Hz)
(treble) . . . . . ±10dB (10kHz)
Loudness contour . . . . . +12dB (100Hz), +7dB (10kHz)
(volume: –30dB)

Tape player

Tape . . . . . Compact cassette tape (C-30–C-90)
Tape speed . . . . . 4.76cm/sec. (+0.14cm/sec., –0.05cm/sec.)
Fast forward/rewind time . . . . . Approx. 100 sec. for C-60
Wow & flutter . . . . . 0.13% (WRMS)
Frequency response . . . . . Metal: 50–17,000Hz (±3dB)
Normal: 50–14,000Hz (±3dB)
Stereo separation 45dB
Signal-to-noise ratio . . . . . Dolby NR IN: 60dB (IEC-A network)
Dolby NR OUT: 52dB (IEC-A network)

FM tuner

Frequency range 87.5–108MHz
Usable sensitivity . . . . . 12dB (1.1μV/75Ω, mono)
50dB quieting sensitivity . . . . . 17dBf (1.9μV/75Ω mono)
Signal-to-noise ratio . . . . . 70dB (IEC-A network)
Distortion . . . . . 0.3% (at 65dBf, 1kHz, stereo)
Frequency response . . . . . 50–12,000Hz (±3dB)
Stereo separation . . . . . 40dB (at 65dBf, 1kHz)

MW (AM) tuner

Frequency range 531–1,602kHz
Usable sensitivity . . . . . 18μV (25dB) (S/N: 20dB)
Selectivity . . . . . 30dB (±9kHz)

LW tuner (KEH-8830SDK, KEH-8830)

Frequency range 153–281kHz
Usable sensitivity . . . . . 30μV (30dB) (S/N: 20dB)
Selectivity . . . . . 30dB (±9kHz)

Note:

Specifications and the design are subject to possible modification without notice due to improvements.

- 'Dolby' and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.
- Noise Reduction System manufactured under license from Dolby Laboratories Licensing Corporation.

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS [USA] INC. P.O. Box 1760, Long Beach, California 90801 U.S.A.
TEL: [800] 421-1404, [800] 237-0424
PIONEER ELECTRONIC [EUROPE] N.V. Keetberglaan 1, 2740 Beveren, Belgium TEL: 03/775-28-08
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia
TEL: [03] 580-9911

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CONTENTS

1. PARTS LOCATION 1
2. CONNECTION 2
3. OPERATION 3
4. DISASSEMBLY 6
5. CIRCUIT DESCRIPTION 7
6. ADJUSTMENT
   - 6.1 Dolby NR Level Adjustment 18
   - 6.2 Decoder Adjustment 19
   - 6.3 AM IF Adjustment 19
   - 6.4 AM Tracking Adjustment 20
   - 6.5 FM IF Adjustment 21
   - 6.6 FM MPX Adjustment 21
   - 6.7 Separation Adjustment 21
   - 6.8 FM ARC Adjustment 21
   - 6.9 FM Tracking Adjustment 22
7. SCHEMATIC CIRCUIT DIAGRAM (KEH-8830SDK) 28
8. CONNECTION DIAGRAM (KEH-8830SDK) 32
9. SCHEMATIC CIRCUIT DIAGRAM (KEH-8830) 36
10. CONNECTION DIAGRAM (KEH-8830) 40
11. SCHEMATIC CIRCUIT DIAGRAM (KEH-8800) 44
12. CONNECTION DIAGRAM (KEH-8800) 48
13. CABINET EXPLODED VIEW 52
14. CHASSIS EXPLODED VIEW 53
15. ELECTRICAL PARTS LIST 58
16. PACKING METHOD 64

1. PARTS LOCATION

The photo shows the model KEH-8830SDK.

NOTE

- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ : GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

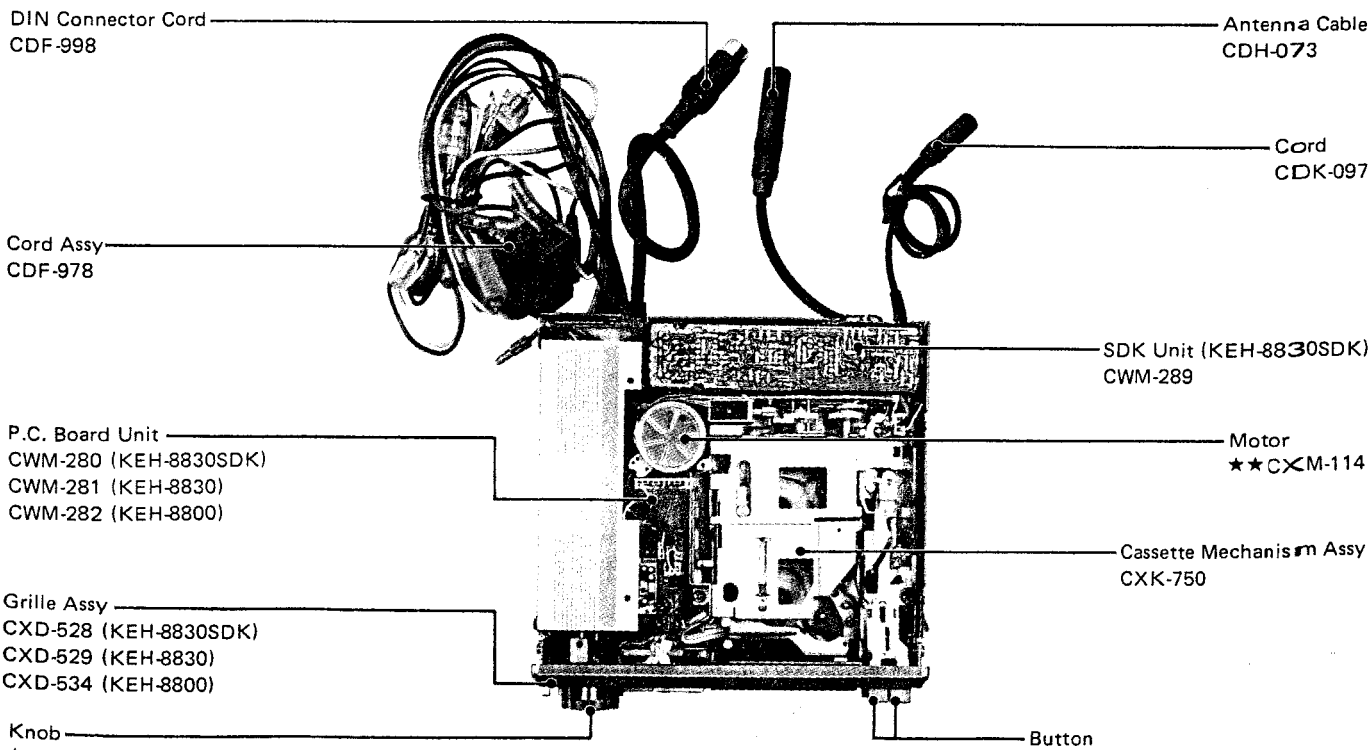


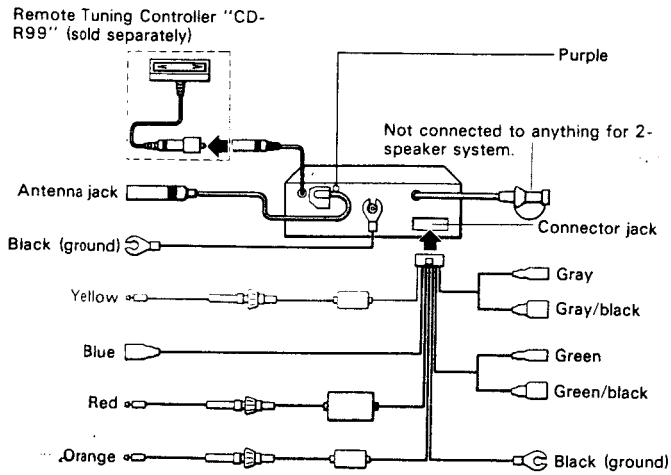
Fig. 1

2. CONNECTION

Note:

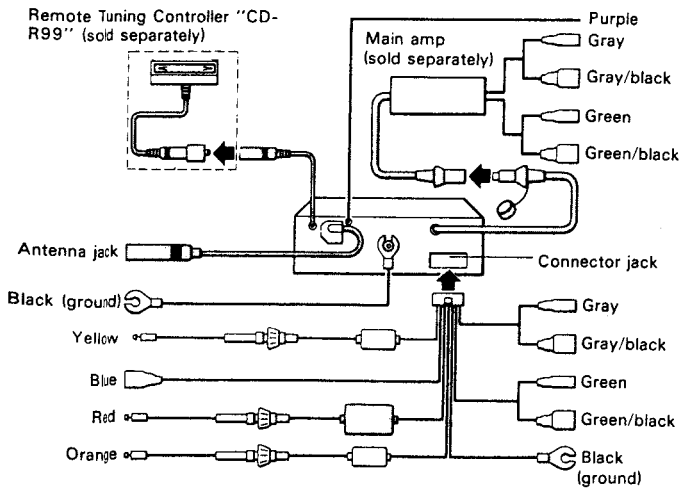
- To avoid shorts in the electrical system, be sure to disconnect the battery ⊖ cable before beginning installation.
- When replacing fuses, be sure to use only fuses of the same capacity.
- Be sure to properly connect the color coded leads. Failure to do so can cause malfunctions.
- Since a unique BPTL circuit is employed, never wire so the speaker leads are directly grounded or the left and right speaker ⊖ leads are common.

2-speaker system



- See the respective main amp owner's manual for detailed wiring (power supply, etc.) information.

4-speaker system



- Speakers connected to this unit must be high-power type possessing maximum output of at least 20W and impedance of 4 to 8 ohms. Connecting speakers with output and/or impedance values other than those noted here can damage the speakers.

Black (ground)	To vehicle (metal) body.
Yellow	To lighting switch terminal.
Blue	To auto-antenna power terminal (Max. 300mA 12V DC).
Red	To electric terminal controlled by ignition switch (12V DC) ON/OFF.
Orange	To terminal always supplied with power regardless of ignition switch position.
Purple	Connect to the positive ⊕ terminal of the memory back up battery (+4.5 – 6V) when the quick-release mounting bracket is used.
Gray	To right speaker ⊕ terminal.
Gray/black	To right speaker ⊖ terminal.
Green	To left speaker ⊕ terminal.
Green/black	To left speaker ⊖ terminal.

Unit leads

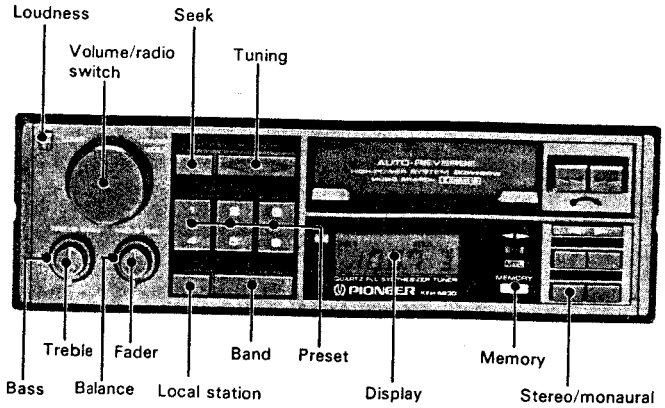
Black (ground)	To vehicle (metal) body.
Yellow	To lighting switch terminal.
Blue	To auto-antenna power terminal (Max. 300mA 12V DC).
Red	To electric terminal controlled by ignition switch (12V DC) ON/OFF.
Orange	To terminal always supplied with power regardless of ignition switch position.
Purple	Connect to the positive ⊕ terminal of the memory back up battery (+4.5 – 6V) when the quick-release mounting bracket is used.
Gray	To front/right speaker ⊕ terminal.
Gray/black	To front/right speaker ⊖ terminal.
Green	To front/left speaker ⊕ terminal.
Green/black	To front/left speaker ⊖ terminal.

Main amp leads

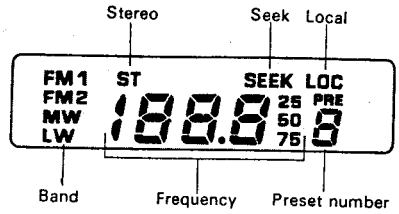
Gray	To rear/right speaker ⊕ terminal.
Gray/black	To rear/right speaker ⊖ terminal.
Green	To rear/left speaker ⊕ terminal.
Green/black	To rear/left speaker ⊖ terminal.

3. OPERATION

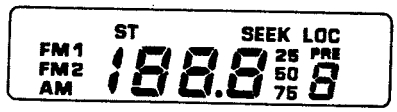
• Using the Radio



KEH-8830
KEH-8830SDK



KEH-8800



• Before attempting operation.....

- Reduce the volume by turning the volume control knob to the left.
- Set the fader control to the upright position.

1. Press the radio switch to turn on power and display the frequency.
2. Press the band switch to select the band.

Note:

- LW band
  For units supplied with LW band, switching between FM and MW/LW is controlled by the band switch. Switching between LW and MW is accomplished using the tuning button. The MW band is from 531kHz to 1,602kHz, and the LW band is from 153kHz to 281kHz.

3. Press the seek button and the seek tuning indicator will be displayed.
4. Press either the left or right side of the tuning button to tune in the desired frequency. (Pressing the right side will increase the frequency.)
5. Adjust the volume, bass, treble and balance. Press the loudness switch if required.

• To enter a frequency into the preset memory.....

6. Press the memory button and the preset number will flash.
7. During the interval that the preset number is flashing (approximately 5 seconds), press one of the preset buttons (1 – 6) to enter the frequency into the memory. At this time the number of the button pressed will be displayed. Six FM1 frequencies, six FM2 frequencies and six AM frequencies can be entered.

Note:

- For units supplied with LW band, a total of six frequencies can be preset for MW and LW combined.

• Stereo/Monaural Switch

This switch is used to change from stereo to monaural for FM broadcasts, and is usually left in the stereo position. When a stereo broadcast is received, the stereo indicator will illuminate on the display. With the "Automatic Reception Control" (ARC) function, stereo broadcasts can always be enjoyed in their optimal reception mode. If excessive noise is present, pressing this switch allows monaural reception of the broadcast.

• Local Station Switch

Pressing this switch lowers the seek tuning reception sensitivity so that only stronger signals can be tuned in. This feature is convenient when driving through areas that have numerous radio stations. When this switch is depressed, the local indicator will be illuminated on the display.

• Fader Control

This control is used to adjust the balance between the front and rear speakers when using a 4-speaker system: Turning the control to the right decreases the volume of the rear speakers, while turning it to the left decreases the volume of the front speakers. With 2-speaker systems, set this control of the upright position.

Seek Tuning

Press the seek button, and tuning to the next higher or lower broadcast on the band can be accomplished automatically by simply pressing either the left or right side of the tuning button. FM frequencies will change in 50kHz steps while those in the AM (MW) band will change in 9kHz steps.

- **LW Band (KEH-8830SDK, KEH-8830)**

Frequencies change in 9kHz steps when seek tuning is used in the LW band. Pressing the right side of the tuning button will increment the frequency in the LW band up to 281kHz, and then advance to 531kHz in the MW band. When 1,602kHz is reached in the MW band, tuning will wrap around to 155kHz. If the left side of the tuning button is pressed, tuning will wrap around to 1,602kHz in the MW band when 153kHz is reached in the LW band. (Fig. 2)

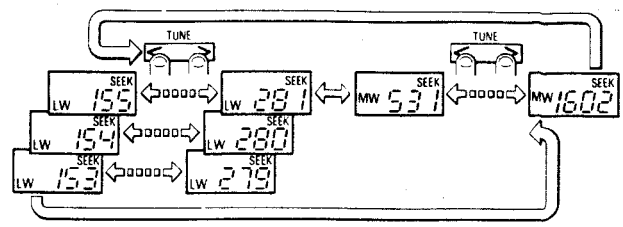


Fig. 2

Preset Tuning

Pressing the preset button instantly tunes in the frequency programmed in the memory for that button.

Manual Tuning

When manual tuning is employed, FM frequencies change in 25kHz steps while AM (MW) frequencies change in 9kHz steps.

1. Press the seek button and the seek tuning indicator will disappear from the display.
2. Change the frequency by pressing either the left or right side of the tuning button. Pressing the button once will change the frequency one step (see above). Continuously depressing either side of the button will successively change the frequency at the prescribed step.

- **LW Band (KEH-8830SDK,KEH-8830)**

Frequencies in the range from 153kHz to 281kHz are available for tuning with units supplied with LW band. Pressing either side of the tuning button in the LW band will change the frequency in 1kHz steps. Pressing the right side of the tuning button will increment the frequency in the LW band up to 281kHz, and then advance to 531kHz in the MW band. When 1,602kHz is reached in the MW band, tuning will wrap around to 155kHz. If the left side of the tuning button is pressed, tuning will wrap around to 1,602kHz in the MW band when 153kHz is reached in the LW band. (Fig. 3)

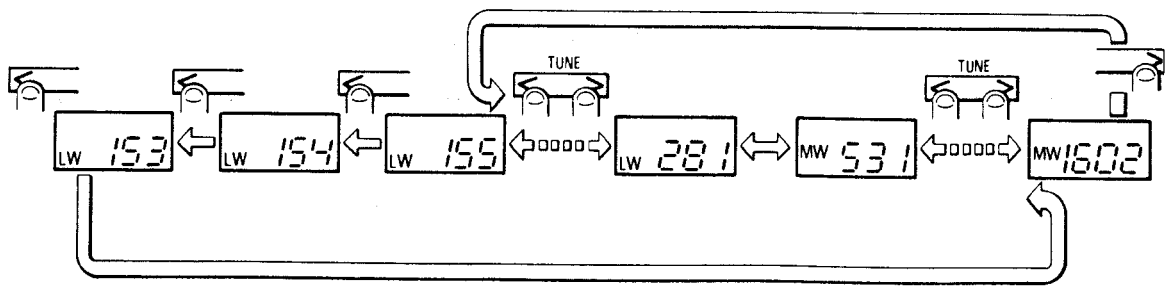
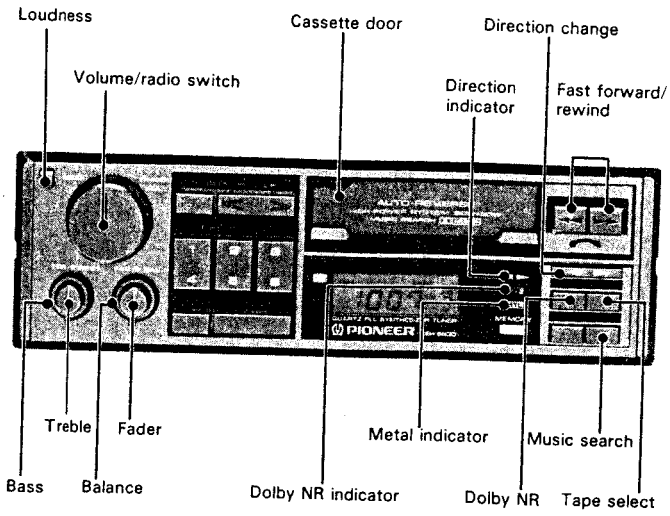


Fig. 3

• Using the Tape Deck



- **Before attempting operation.....**
- Reduce the volume by turning the volume control knob to the left.
- Set the fader control to the upright position.

1. Insert a tape into the deck to turn the power on and automatically begin playback. Even if the radio is on, the unit will automatically switch to and begin tape playback.
2. Adjust the volume, bass, treble and balance. Press the loudness switch if required.
3. When tape playback reaches the end of the tape, playback will automatically switch from the side being played to the opposite side (ie. Side A to Side B or vice versa) (Auto-reverse). To eject the tape during playback, simultaneously press the fast forward and rewind buttons.

Note:

- Do not try to eject the cassette immediately after insertion, as it will cause malfunction. Wait a few seconds.
- If the ignition of the vehicle is turned OFF 2 to 3 seconds after the direction change button is pressed, the tape can not be ejected even if the ejection button is pressed. When this happens, turn the ignition key to the ON or ACC position to remove the tape.

• Fast Forward/Rewind

Since the transport can be in either direction, both the left and right high-speed tape transport buttons can be regarded as fast forward/rewind buttons.

For fast forward, press the high-speed tape transport button that corresponds to the direction that is shown by the direction indicator. When the end of the tape is reached, playback will automatically begin from the opposite side of the tape (Auto-reverse).

For rewind, press the button that is opposite that of the direction shown by the direction indicator. When the end of the tape is reached, playback will automatically begin from the beginning of the same side of the tape (Auto-replay).

Fast forward and rewind can be terminated by pressing the respective opposite high-speed tape transport button.

• Direction Change Button

This button is used to switch from one side of the tape to the other (from Side A to Side B or vice versa).

• Tape Select Switch

This switch is used to switch to the proper mode for the tape being used and should be depressed when using chrome or metal tapes.

• Dolby NR Switch

Press when playing a tape recorded with Dolby NR.

Music Search

The music search function is convenient for automatic playback from the beginning of the selection being played or the beginning of the next selection.

• Returning to the beginning of selection C

Press the music search button and then the high-speed tape transport button for the direction opposite that shown by the direction indicator. Playback will automatically start from the beginning of selection C.

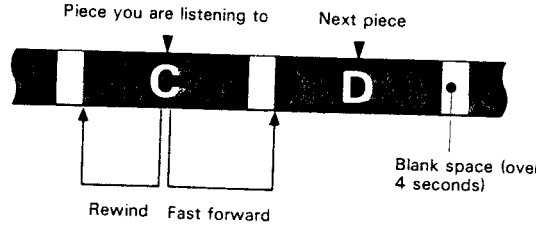
• Moving from selection C to selection D

Press the music search button and then the high-speed tape transport button that corresponds to the direction shown by the direction indicator. Playback will automatically start from the beginning of selection D.

Note:

To enable regular fast forward/rewind operations, press the music search button again to turn the function OFF. The following errors will cause the music search function to operate improperly, even though the unit is not malfunctioning.

- Unrecorded "blank" portions between selections is less than 4 seconds → the blank portion cannot be detected by the unit.
- Pauses in recorded conversations are longer than 4 seconds → the unit reads these as blanks between selections.
- Portions are recorded at very low volume for more than 4 seconds → the unit reads these as blanks between selections.



4. DISASSEMBLY

• Removing the Case Unit

1. Remove the five screws and then take off the case unit.

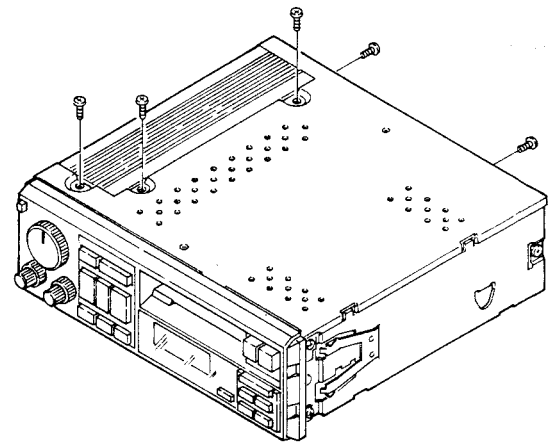


Fig. 4

• Removing the Grille Assy

1. Remove the five knobs.
2. Remove the four screws and remove grille assy.

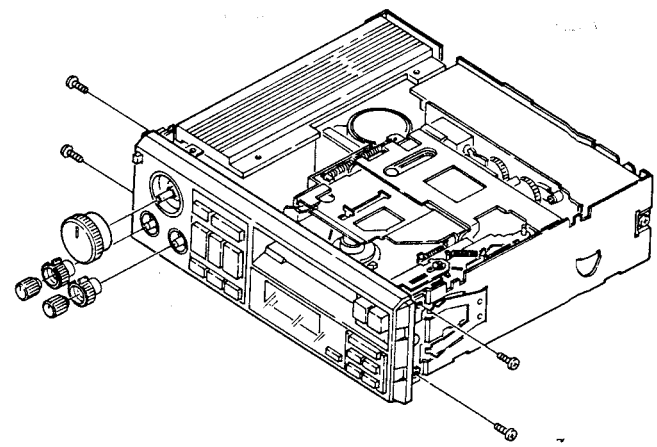


Fig. 5

• Removing the Cassette Mechanism Assy

1. Remove the four screws.
2. Disconnect the two connectors.
3. Remove the cassette mechanism assy.

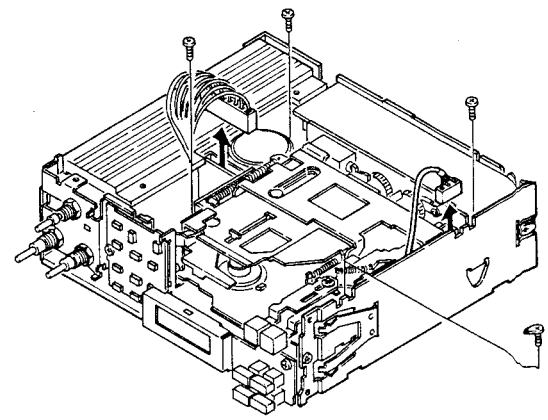


Fig. 6

5. CIRCUIT DESCRIPTION

• Level Diagram

KEH-8830 SDK

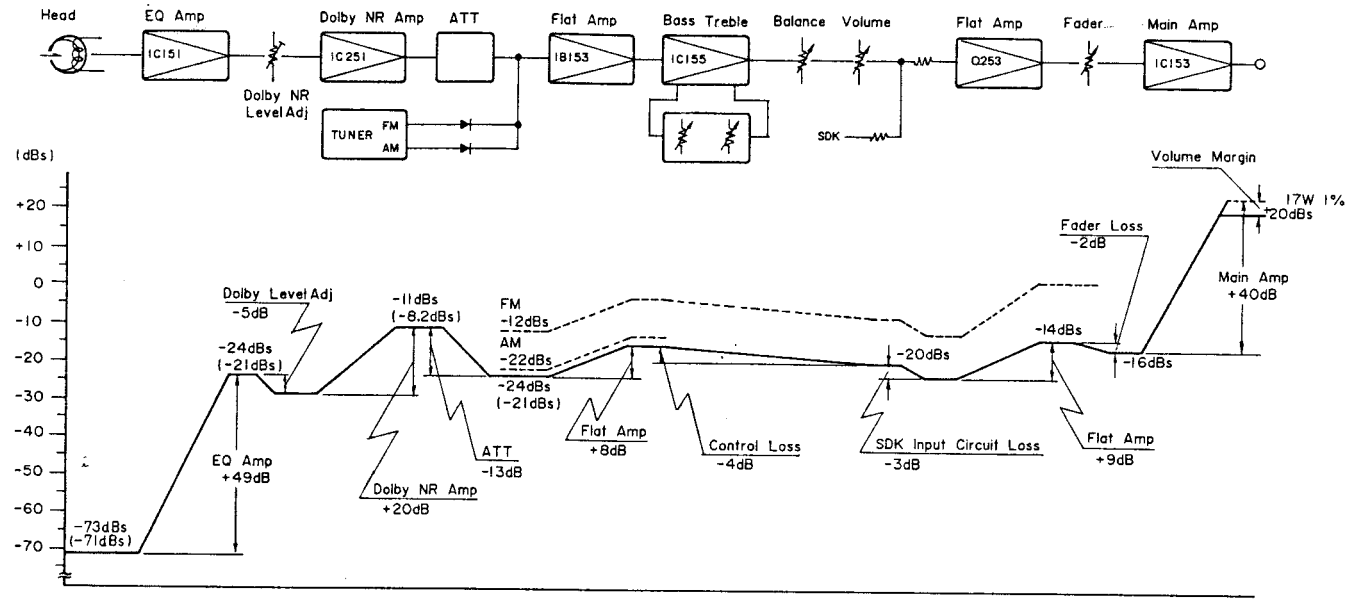


Fig. 7

KEH-8830, KEH-8800

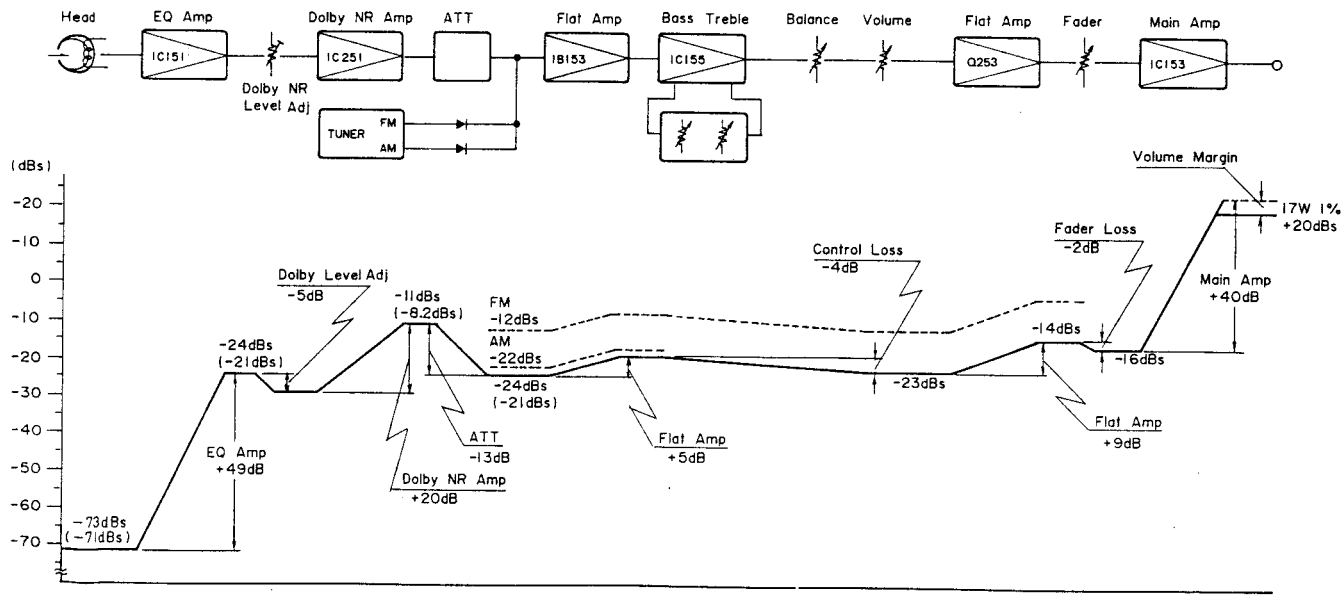


Fig. 8

• Block Diagram

KEH-8830 SDK

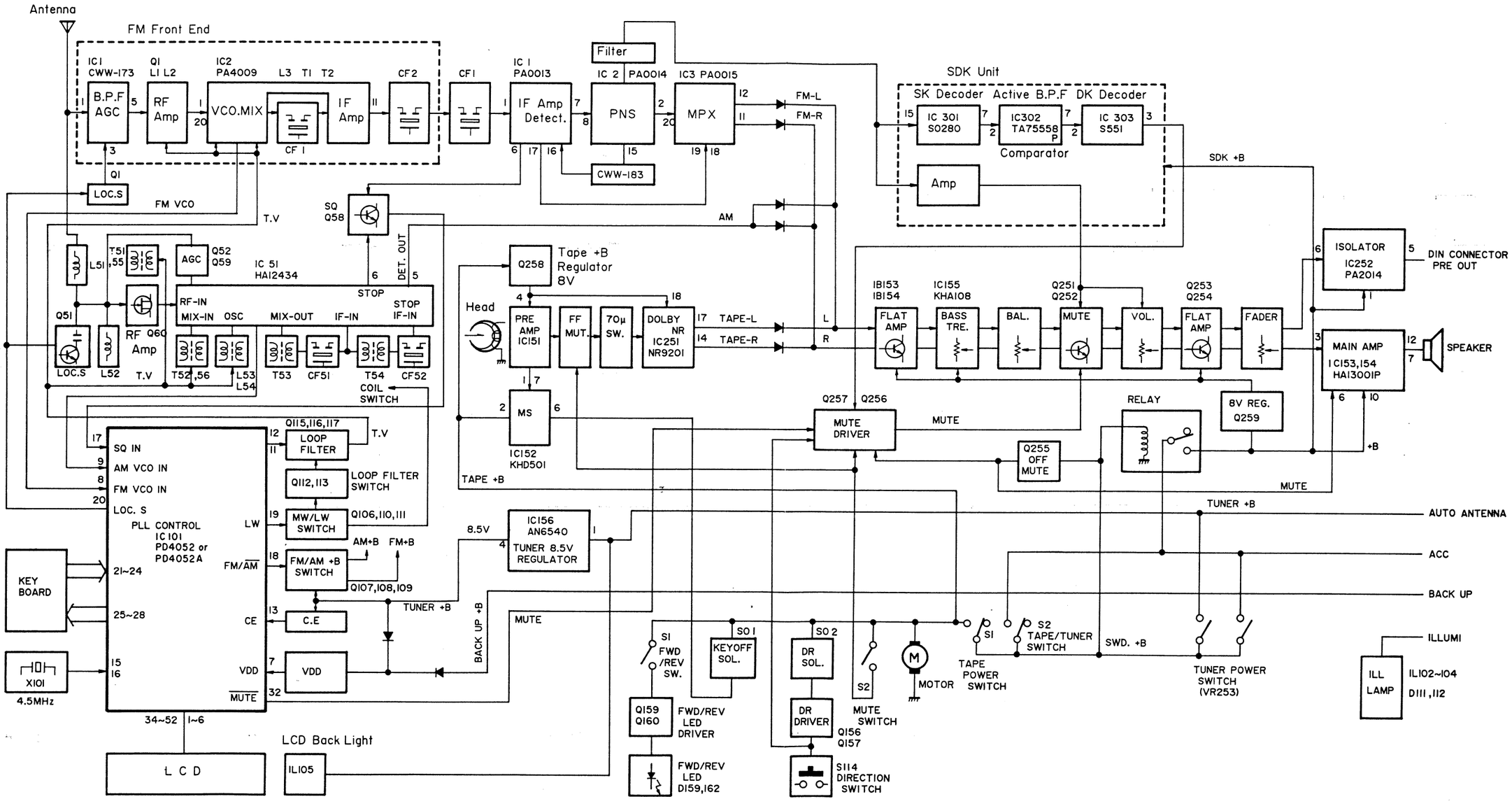


Fig. 9

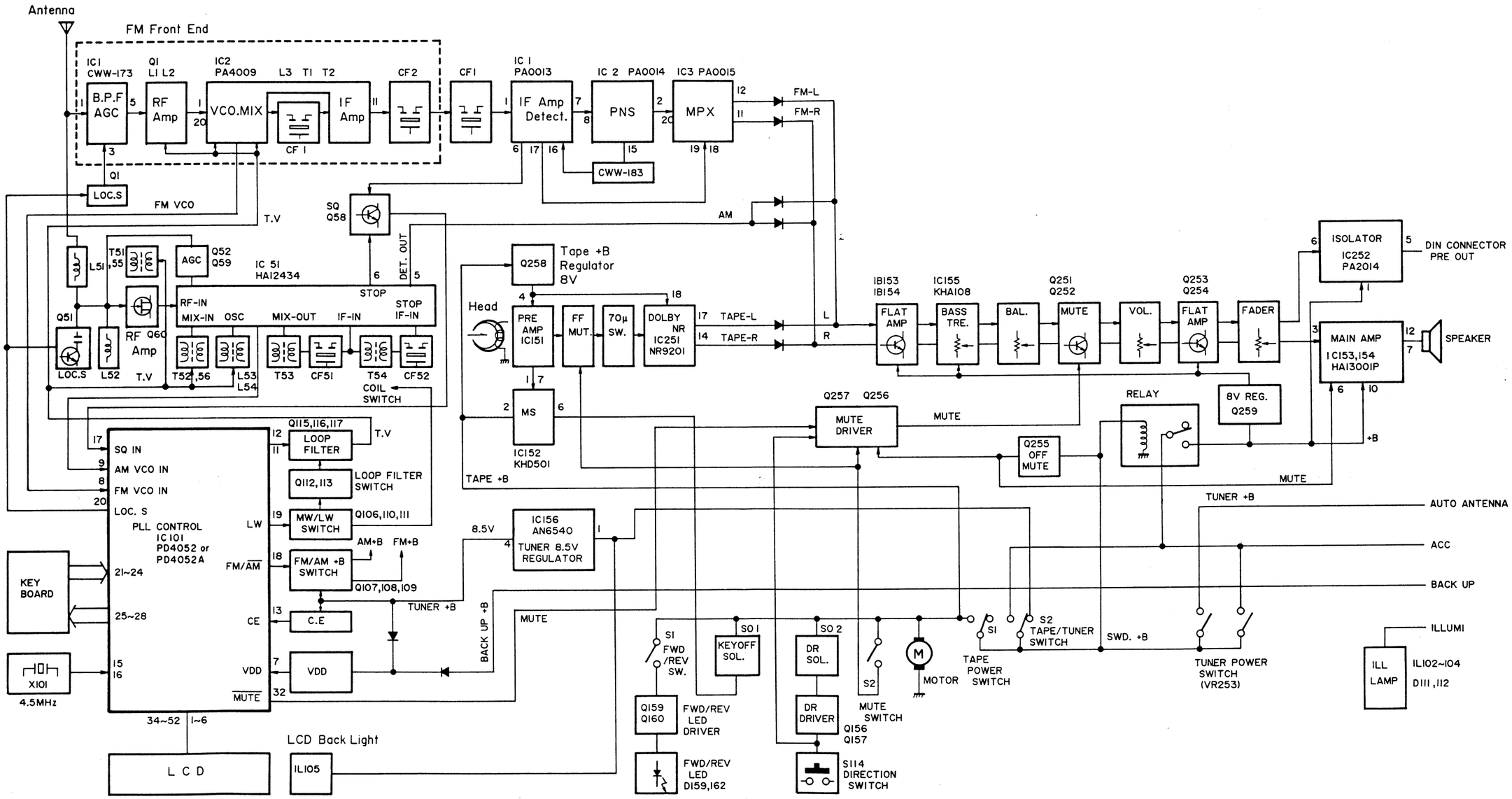

Antenna
FM Front End
IC1 CWW-173
B.P.F AGC
RF Amp
Q1 L1 L2
IC2 PA4009
VCO.MIX
L3 T1 T2
CF1
IF Amp
CF2
CF1
IC 1 PA0013
IF Amp Detect.
IC 2 PA0014
PNS
IC3 PA0015
MPX
FM-L
FM-R
CWW-183
Q1
LOC.S
FM VCO
T.V
SQ Q58
AM
L5I
T5I ,55
AGC
Q52 Q59
IC 5I HAI2434
STOP
DET. OUT
RF-IN
MIX-IN
OSC
MIX-OUT
IF-IN
STOP IF-IN
Q5I
RF Amp
Q60
LOC.S
L52
T.V
T52,56
L53 L54
T53
CF5I
T54
CF52
COIL SWITCH
Q258
Tape +B Regulator 8V
Head
PRE AMP IC151
FF MUT.
70µ SW.
DOLBY NR IC251 NR9201
TAPE-L
TAPE-R
MS
IC152 KHD501
TAPE +B
IB153 IB154
FLAT AMP
IC155 KHA108
BASS TRE.
BAL.
Q251 Q252
MUTE
VOL.
Q253 Q254
FLAT AMP
FADER
ISOLATOR IC252 PA2014
DIN CONNECTOR PRE OUT
MAIN AMP IC153,154 HAI3001P
SPEAKER
Q257 Q256
MUTE DRIVER
MUTE
RELAY
8V REG. Q259
Q255 OFF MUTE
+B
Q115,116,117
LOOP FILTER
T.V
Q112,113
LOOP FILTER SWITCH
MW/LW SWITCH
Q106,110,111
FM/AM +B SWITCH
Q107,108,109
AM+B
FM+B
C.E
VDD
MUTE
SQ IN
AM VCO IN
FM VCO IN
LOC. S
PLL CONTROL IC101 PD4052 or PD4052A
LW
FM/AM
CE
VDD
MUTE
KEY BOARD
X101
4.5MHz
IC156 AN6540 TUNER 8.5V REGULATOR
8.5V
TUNER +B
BACK UP +B
MUTE
TUNER +B
AUTO ANTENNA
ACC
BACK UP
SWD. +B
S1
FWD /REV SW.
KEYOFF SOL.
S01
DR SOL.
S02
S2
MUTE SWITCH
MOTOR
TAPE POWER SWITCH
S1
S2
TAPE/TUNER SWITCH
TUNER POWER SWITCH (VR253)
ILLUMI
ILL LAMP
IL102~104
D111,112
Q159 Q160
FWD/REV LED DRIVER
DR DRIVER
Q156 Q157
FWD/REV LED D159,162
S114 DIRECTION SWITCH
LCD Back Light
L C D
IL105
34~52
1~6

Fig. 10

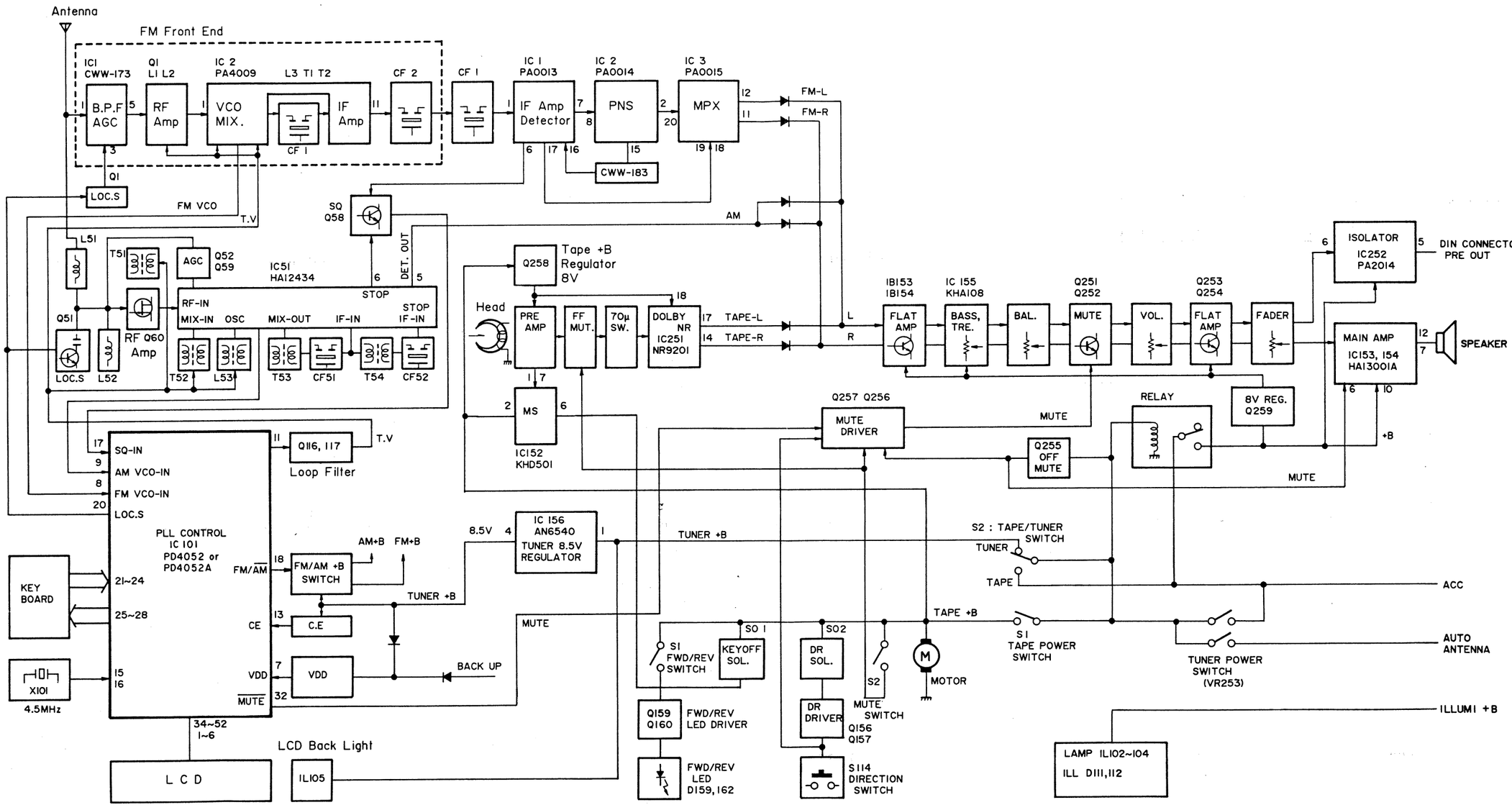

Antenna
FM Front End
IC1 CWW-173
Q1 L1 L2
IC 2 PA4009
L3 T1 T2
CF 2
CF 1
IC 1 PA0013
IC 2 PA0014
IC 3 PA0015
B.P.F AGC
RF Amp
VCO MIX.
IF Amp
IF Amp Detector
PNS
MPX
FM-L
FM-R
CWW-183
Q1
LOC.S
FM VCO
T.V
SQ Q58
AM
L5I
T5I
AGC
Q52 Q59
IC5I HAI2434
DET. OUT
STOP
RF-IN
MIX-IN
OSC
MIX-OUT
IF-IN
STOP IF-IN
Q5I
RF Q60 Amp
LOC.S
L52
T52
L53
T53
CF5I
T54
CF52
Q258
Tape +B Regulator 8V
Head
PRE AMP
FF MUT.
70µ SW.
DOLBY NR IC25I NR9201
TAPE-L
TAPE-R
IC152 KHD501
MS
IB153 IB154
IC 155 KHAI08
FLAT AMP
BASS, TRE.
BAL.
Q25I Q252
MUTE
VOL.
Q253 Q254
FLAT AMP
FADER
ISOLATOR IC252 PA2014
DIN CONNECTOR PRE OUT
MAIN AMP IC153, 154 HAI3001A
SPEAKER
Q257 Q256
MUTE DRIVER
MUTE
RELAY
8V REG. Q259
+B
Q255 OFF MUTE
MUTE
17 SQ-IN
9 AM VCO-IN
8 FM VCO-IN
20 LOC.S
PLL CONTROL IC 101 PD4052 or PD4052A
21~24
25~28
15 16
34~52 1~6
11
Q116, 117
Loop Filter
T.V
KEY BOARD
XI01
4.5MHz
FM/AM
18
FM/AM +B SWITCH
AM+B
FM+B
TUNER +B
13
C.E
7
VDD
VDD
BACK UP
32
MUTE
LCD
LCD Back Light
IL105
IC 156 AN6540 TUNER 8.5V REGULATOR
8.5V
4
1
TUNER +B
MUTE
S1 FWD/REV SWITCH
SO 1
KEYOFF SOL.
SO2
DR SOL.
DR DRIVER
Q156 Q157
S2
MUTE SWITCH
M
MOTOR
S114 DIRECTION SWITCH
Q159 Q160
FWD/REV LED DRIVER
FWD/REV LED D159, 162
S2 : TAPE/TUNER SWITCH
TUNER
TAPE
TAPE +B
S1 TAPE POWER SWITCH
TUNER POWER SWITCH (VR253)
ACC
AUTO ANTENNA
ILLUMI +B
LAMP IL102~104
ILL DIII, II2

Fig. 11

• Operation of FM Section

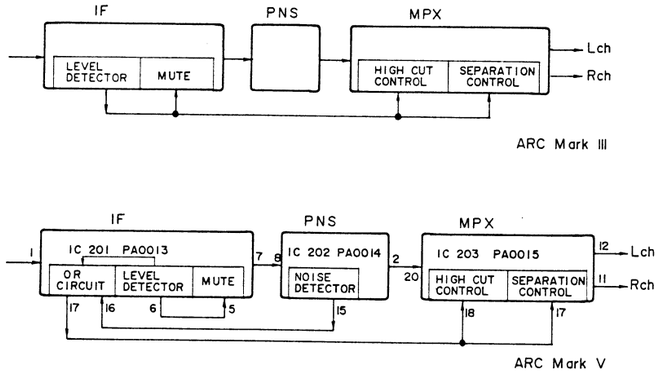


Fig. 12

ARC Mark V

The high-cut and separation, which were controlled by the input signal strength level in the ARC Mark III, can also be controlled by the noise level in the ARC Mark V. Therefore noise in strong signal areas, impossible to suppress before, can now be suppressed adequately.

Noise Detector Circuit

Co-using the PNS HIGH PASS FILTER, this operates by detecting the components above 100 kHz in the wave detector output. The HPF output is amplified to a sufficient level, rectified, phase reversed and then DC converted.

Input Level 35 dBμV Switch

The noise level ceases to control the high-cut and separation when the input level drops below 35 dBμV, and control of these is carried out entirely by the input signal strength level. This is the same as in the Mark III. This function operates in this manner because the noise level control will always output a signal when the signal strength is below 35 dBμV, and signal strength control is sufficient for medium-weak input signal areas.

1. Front end section

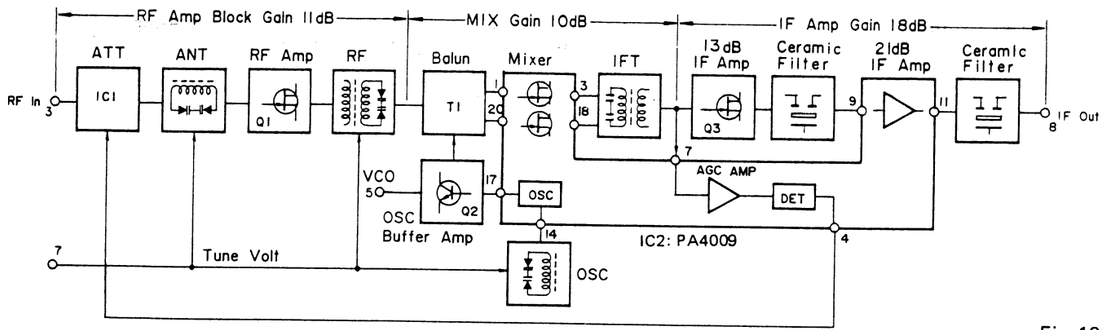


Fig. 13

The RF signal from the antenna passes through an attenuator constructed as a band-pass filter and is sent to the pi-shaped matching circuit, where high-end spurious response is improved. The signal then goes to the next stage, the RF amp. The RF amp employs a MOS FET capable of handling a wide dynamic range. The output from the RF amp passes through a parallel resonance circuit, is converted to a balanced signal from an unbalanced by a balun circuit and then goes to the mixer stage. This is a J-FET single balance type mixer which can accommodate a wide dynamic range. One of the IF signals from the mixer passes through the IF amp and ceramic filters. Another IF signal goes to the AGC amp. This AGC amp can operate even in the presence of interference signals. The AGC amp output is fed back to the RF attenuator circuit, forming a wide loop AGC. The AGC circuit operates at antenna input levels above 65 ±5 dB.

2. IF detector section

A single-tuning quadrature detection is performed by IC PA0013 using IF amp and T1 to obtain an audio frequency output.

3. PNS section

This is a pulse noise canceller using IC PA0014 and CR composite part CR1 which comprises filters.

4. Multiplexer section

Stereo multiplexing is performed by IC PA0015. This IC does not operate the stereo circuit in the absence of current flowing through the stereo indicator terminal (pin 3).

5. Muting of weak incoming signals

IC PA0013 develops a DC voltage at pin 6 when the input is weak or detuned. When this voltage is applied to pin 5 through the filter consisting of capacitors and resistors, the attenuator goes into operation. The on/off (AUTO/MONO) of this weak input signal muting is controlled.

The stop signal for the seek operation uses a voltage developed at pin 6. (During broadcast reception, the voltage is at 0V).

• Operation of AM Section

IC HA12434 used in this unit is designed for electronic tuning and provided with the output circuit of the stop signals for seeking and VCO buffer. Its feature includes a wide-band AGC.

1. RF amplifier section

This section performs a single-tuning 2-stage RF amplification. The first stage is a narrow-band amplifier section consisting of Q60 and its load, i.e., resonance circuit (inductance of T51, and capacitance of varicap diode D54-1, C61). The second stage is a section consisting of RF amplifier 1 inside the IC and its load, or resonance circuit (inductance of T52, and capacitance of D54-2, C65). Pin 15 is not only a terminal lead to which the load of RF amp 1 is connected, but also an input terminal pin of the mixer input.

2. VCO section

The VCO (voltage-controlled oscillator) oscillates at its resonant frequency by the feedback circuit from pin 12 to pin 13 and the resonant circuit connected to pin 13. The resonant frequency is determined by the inductance of L53 and the composite capacitance of C_A, C_B, and D54-2.

C_A is a padding capacitor connected in series with capacitance-varying varicap diode D54-3, and C_B is a capacitor connected in parallel with varicap diode depending on its grade. All this contributes to better tracking with the RF stage.

6. Local station seeking

While seeking strong signal stations, the gain of the front end is decreased by making the voltage at AGC terminal in the front end 4.5V by Q1.

7. Separation control, high frequency control.

Pin 17 of IC3 (PA0015) functions as the separation control (SNC) pin, and pins 18 and 19 function as the high-cut control (HCC) pins. SNC and HCC are controlled by the control voltage from pin 17 of IC1 (PA0013). The control voltage can be varied by adjusting semi-fixed volume VR1, connected to pin 20 of IC1. SNC and HCC are controlled by the input signal strength level. However, these are also controlled by the noise detector level from IC2 (PA0014, PNS), unless the input signal strength is below 35 dBμV. The noise detector output from pin 7 of CR1 is input to pin 16 of IC1. The noise detector control of the high-cut and separation will switch on above 35 dBμV.

8. Mono/stereo

When the Mono switch is turned on, pin 6 of IC3 (PA0015) will be grounded, the stereo indicator will go out, and the output will switch to monaural. Pin 5 (MUTE DRIVE PIN) of IC1 (PA0013) will also be grounded, disengaging the level mute.

3. Mixer section

The VCO output frequency from the VCO section and the input signal from RF amp 1 are mixed together at the mixer section to produce the IF component (450 kHz).

4. IF section

The intermediate frequency section consists of the IF filter (450 kHz) by T53 and CF51, the IF amp 1 and the IF filter by T54. Pin 8 is not only a load connecting terminal of the IF amp but also an input terminal of detector circuit 1.

5. Detector section

Pin 8 is connected to the detector and provides an output to pin 5, audio output. This output contains both audio frequency component (AC) and DC component.

6. AGC section (AGC by the reception frequency)

The DC component of the detector output at pin 5 is detected by AGC amp 1 at pin 1 by passing it through the filter consisting of R84 and C87. The AGC starts operating at an input level close to the maximum sensitivity. The output of AGC amp 1 is connected to AGC amp 2, and controls the gain of RF amp 1.

The AGC voltage is developed at pin 3 through AGC amp 3, and current flows through D51 and D52 lowering the impedance. As a result, attenuation is effected.

When Q52 turns on and the load impedance of the drain

of Q60 is lowered, attenuation is effected. These attenuations due to the decrease in impedance enable AGC operation. The input level to develop a voltage at pin 3 is about 55 dBμV during reception of MW 999 kHz.
Thanks to the AGC operation mentioned above, the output variation characteristics against input variation are broader than the conventional AM characteristics.

7. AGC section (wide-band AGC)

The wide-band AGC is to control the gain of the RF amplifier section when the input RF level at pin 16 is high. This is intended to prevent interference due to the saturations of RF amp Q60, RF amp 1 in the IC, etc. Caused by a large input other than the reception frequency.
Operation is as follows: A DC voltage corresponding to the level of the input RF is developed at pin 2 by amplifying and detecting the RF signal from pin 16 by RF and 2 and detector 3 respectively. This is delayed by the time constant of C88 and the gain of this portion is determined by R85. By applying this DC voltage to AGC amp 2, the AGC at RF amp 1 and AGC at Q52, D51 and D52 are effected.

8. Stop signal

The stop signal for seek operation is produced by extracting the IF signal from the secondary winding of T54 and adjusting its level by R77, R79 and R80. This signal is connected via 450 kHz filter CF52 from pin 7 to IF amp 2 to detector 2. This output appears at pin 6 and become 0V during reception.

9. Local station/distant station seek

During local station seek, Q51 turns on, whereby C56 is grounded. The impedance of C56 allows attenuation in the antenna system.

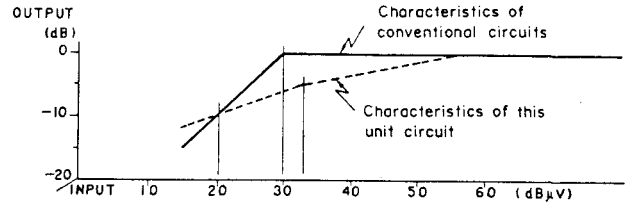


Fig. 14

• Frequency Synthesizer Section (FM)

During FM reception, a combination of synthesizer control IC101 (the frequency dividing ratio is controlled to 1/64 or 1/66 by IC101) allow the slower counter method.
The FM VCO is frequency-divided to a ratio of 1/64 or 1/66 by prescaler IC101.
An output of 4.5 MHz (X101) which becomes a clock pulse for IC101 is divided into 1/360 by the reference frequency divider to produce 12.5 kHz (all this is processed inside IC101). Since the reception frequency is 87.5 ~ 108.0 MHz and the intermediate frequency (IF) is 10.7 MHz, the oscillator frequency of VCO will be 98.2 ~ 118.7 MHz. As the overall frequency division ratio is 7856 ~ 9496, the output of the programmable counter inside IC101 will be 12.5 kHz. This output is compared in phase with a reference frequency of 12.5 kHz by the phase detector in IC101, and is output to pin 12 of IC101.
The loop filter consisting of Q116 and Q115 converts the signal into a DC voltage signal which in turn controls the tuning circuit in the front end section as a tuning voltage.

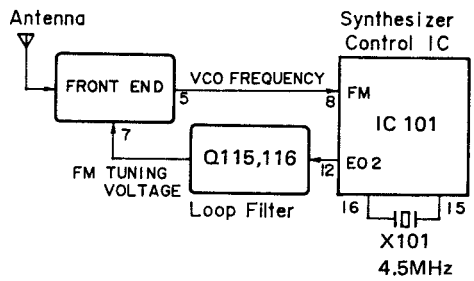


Fig. 15

• Frequency Synthesizer Section (MW)

The MW section employes a direct frequency dividing method. So that the reception frequency is incremented in 9 kHz, the frequency of the phase comparator is 9 kHz. This is produced by dividing 4.5 MHz (the output of X101), a clock frequency of IC101, to 1/500. Since the reception frequency range is 531 ~ 1,602 kHz and the intermediate frequency is selected at 450 kHz, the frequency of the local oscillator (VCO) will be 981 ~ 2,052 kHz.

This output is output from pin 12 of IC51 and enters pin 9 of IC101.

If the frequency dividing ratio of the programmable counter in IC101 is set to 109 ~ 228, the output will be 9 kHz. This frequency is compared in phase with a reference frequency of 9 kHz by the phase comparator and is output from pin 12 of IC101.

The signal is converted into a DC voltage signal by the loop filter consisting of Q116 and Q115, which in turn controls the tuning circuit as a tuning voltage.

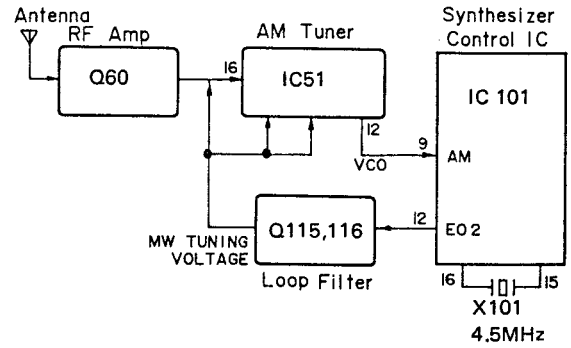


Fig. 16

• The Functions of Control IC (PD4052)

PD4052 is a 52-pin flat package C-MOS LSI which controls 25 kHz incremental tuning for FM, 9 kHz incremental tuning for AM. This PLL type frequency synthesizer tuner control IC makes possible 7-segment digital display. Since this IC employs a static method for the display driver, the performance of the receiver is improved.

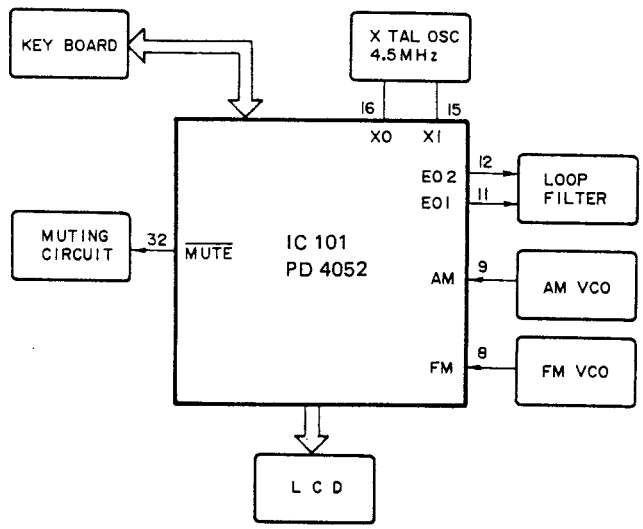


Fig. 17

- **Frequency Synthesizer Section (LW)**

The LW section employs a direct frequency dividing method. So that the reception frequency is incremented in 1 kHz, the frequency of the phase comparator is 1 kHz. This is produced by dividing 4.5 MHz (the output of X101), which is a clock frequency of IC101, into 1/4500.

Since the reception frequency range is 153 ~ 281 kHz and the intermediate frequency is selected at 450 kHz, the frequency of the local oscillator (VCO) is 603 ~ 731 kHz. This output is output from pin 12 of IC51 and enters pin 9 of IC101.

IF the frequency dividing ratio of the programmable counter in IC101 is set to 603 ~ 731, the output frequency is 1 kHz. This is compared in phase with a reference frequency of 1 kHz by the phase comparator and is output from pin 11 of IC101. The output signal is converted into a DC voltage signal by the loop filter consisting of Q116 and Q115, which in turn controls the tuning circuit as a tuning voltage.

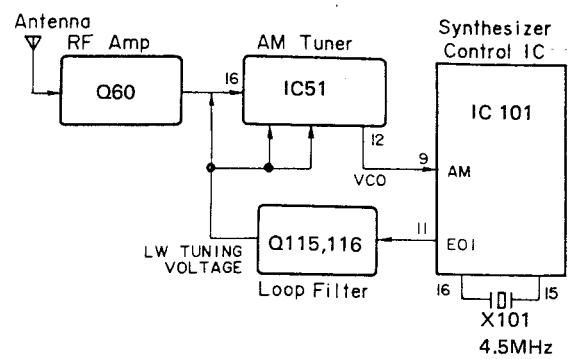


Fig. 18

6. ADJUSTMENT

6.1 DOLBY NR LEVEL ADJUSTMENT

- **Connection Diagram**

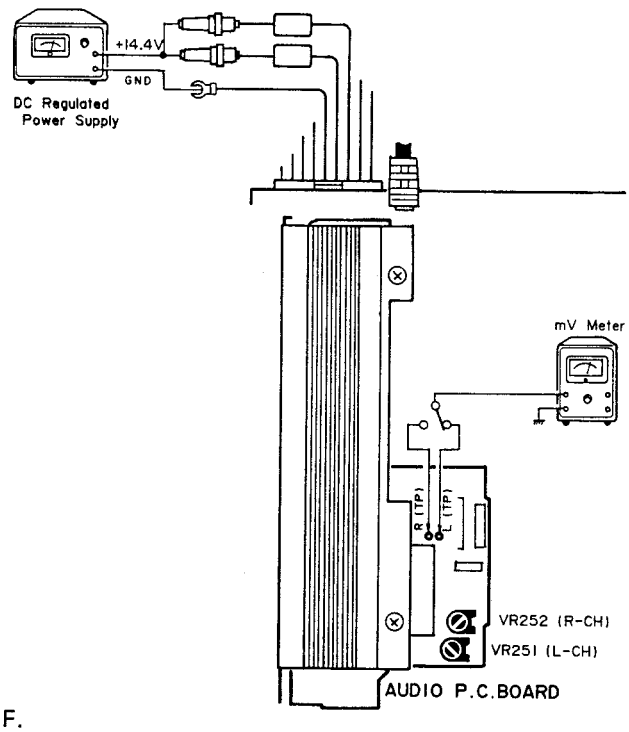


Fig. 19

- **To Adjust**

1. Set the Dolby NR switch to OFF.
2. Playback the Dolby NR level calibration tape CT-150 (400Hz, 200nwb/m) and adjust VR251 (L ch), VR252 (R ch) so that the mV meter shows 300mV ± 1dB, (300 mV = –8.24dBs)

6.2 · DECORDER ADJUSTMENT

- **Connection Diagram**

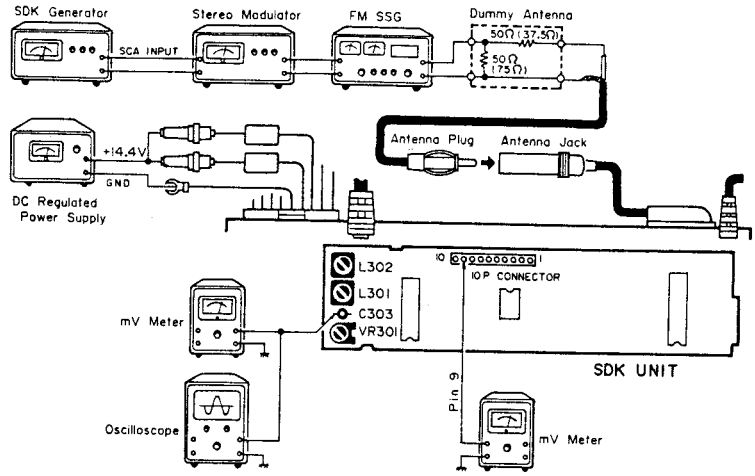


Fig. 20

- **To Adjust**

1. Set the FM SSG as follows:
   Carrier: 98 MHz
   Modulation (audio): 400Hz, 60%
   Modulation (SK) 57 kHz, 5%
2. Adjust the output of SSG so that the amplitude of indicator of mV meter connected to the terminal No. 9 becomes 2.75mV ~ 3mV.
3. Adjust L301 and L302 so that the amplitude of indicator of mV meter connected to C303 becomes maximum.
4. Adjust VR301 so that SDK lamp lights on.

6.3 AM IF ADJUSTMENT

- **Connection Diagram**

IF Generator Scope

Sweep center frequency 450kHz
Input gain 0.3Vp-p/cm

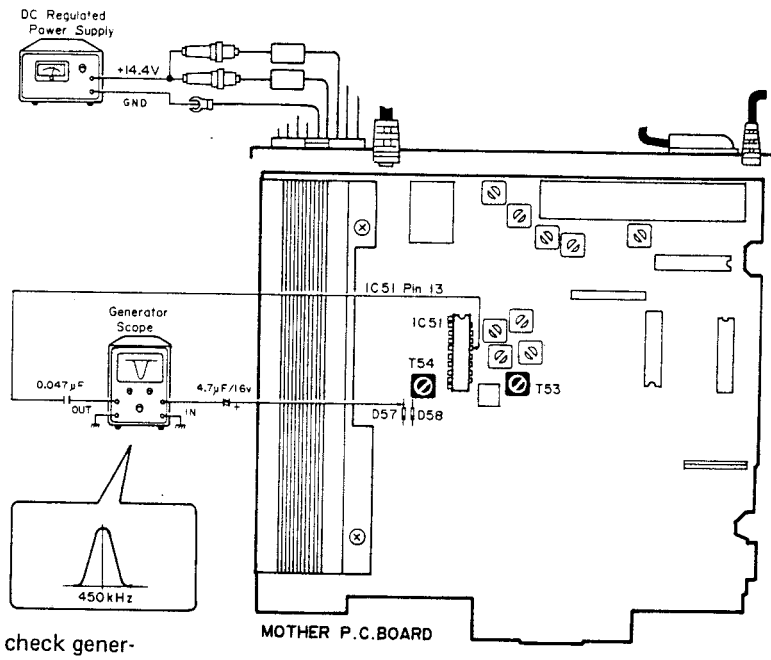


Fig. 21

- **To Adjust**

1. Apply minimum output signal required to check generator scope U curve and adjust T53 and T54 so that curve amplitude is at maximum point and there is optimum symmetry.

6.4 AM TRACKING ADJUSTMENT

- **Connection Diagram**

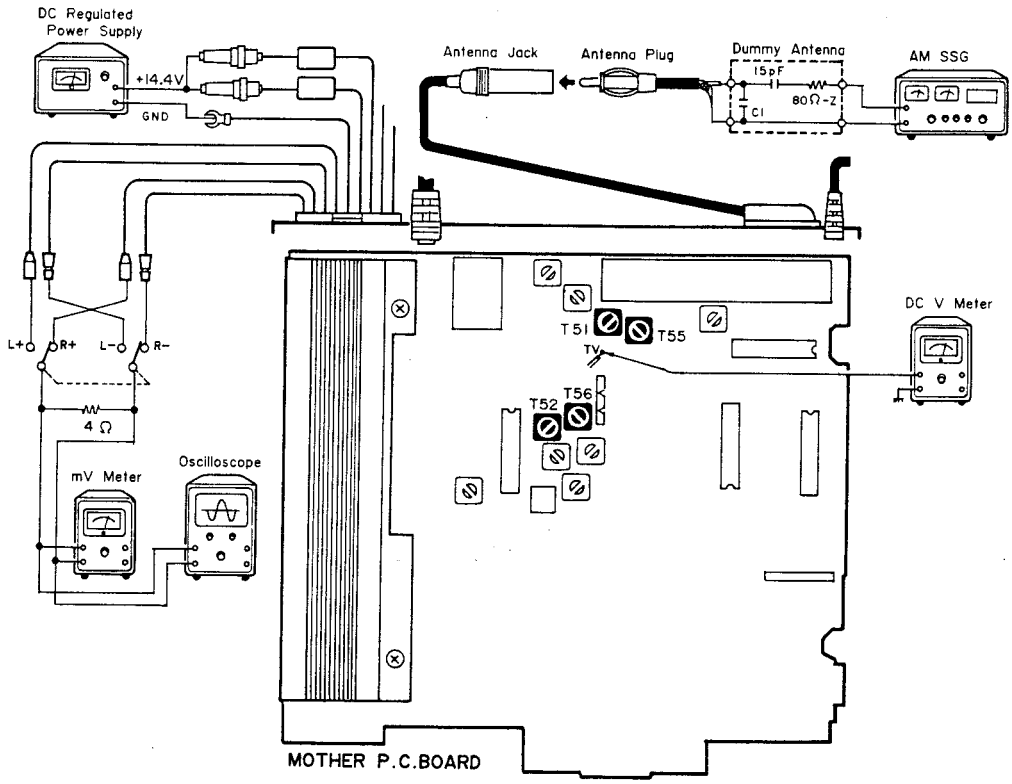


Fig. 22

NOTICE:

Select C1 so that total capacity of 80pF is attained from the direction of the receiver jack.

Z: Output impedance of the SSG.

- **To Adjust (In case of MW)**

Frequency of AM SSG	Displayed Frequency	Adjusting Point	DC V Meter	mV Meter
1.	531 kHz	For Confirmation Only	More than 0.8V	
2. 603 kHz (400Hz, 30% modulation) output level 25 dB (μV)	603 kHz	T51 T52		Maximum output
3.	1,602 kHz	For Confirmation Only	Less than 8.5V	

- **To Adjust (In case of LW ..... KEH-8830SDK, KEH-8830)**

Frequency of AM SSG	Displayed Frequency	Adjusting Point	DC V Meter	mV Meter
1.	153 kHz	For Confirmation Only	More than 2.5V	
2. 218 kHz (400Hz, 30% modulation) output level 25 dB (μV)	218 kHz	T55 T56		Maximum output
3.	281 kHz	For Confirmation Only	Less than 8.5V	

6.5 FM IF ADJUSTMENT

- **Connection Diagram**

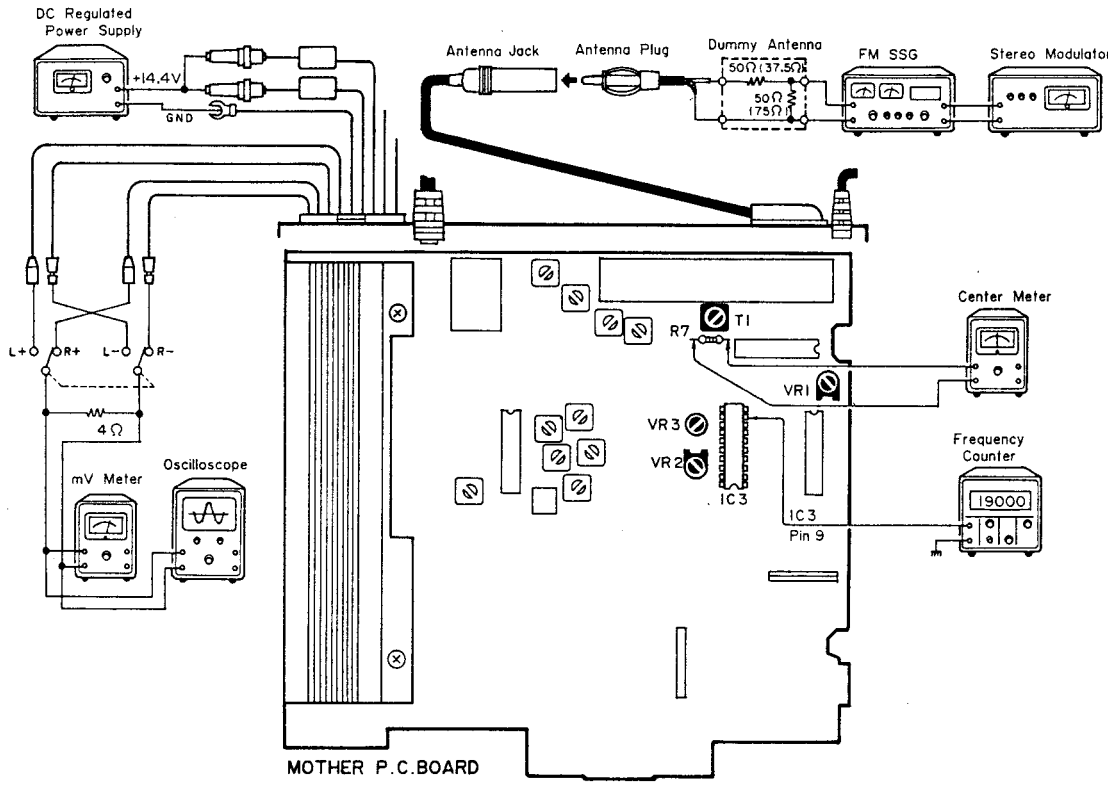


Fig. 23

- **To Adjust**

1. Set the Mono switch to MONO.
2. Apply a signal of 98 MHz, 400 Hz 30% modulation and 60dB (μV) from the FM SSG and tune 98 MHz.
3. Adjust T1 to make the center meter show 0.

6.6 FM MPX ADJUSTMENT

- **Connection Diagram (Show in Fig. 23)**
- **To Adjust**

1. Apply an unmodulated signal of 98 MHz and 60 dB (μV) from the the FM SSG. Tune into a frequency of 98 MHz.
2. Adjust VR3 to make frequency counter show 19 kHz ± 30 Hz.

6.7 SEPARATION ADJUSTMENT

- **Connection Diagram (Show in Fig. 23)**
- **To Adjust**

1. Apply a signal of 98 MHz, 1 kHz 90% modulation and 19 kHz 10% modulation and 60 dB (μV) from the FM SSG. Tune into a frequency of 98MHz.
2. Adjust VR2 to obtain the best separation. (At this time VR1 is turned in a clockwise direction.)

6.8 FM ARC ADJUSTMENT

- **Connection Diagram (Show in Fig. 23)**
- **To Adjust**

1. Set the Mono switch to AUTO.
2. Apply a signal of 98 MHz, 1 kHz 90% modulation and 19 kHz 10% modulation and 35 dB (μV) from the FM SSG. Tune into a frequency of 98 MHz.
3. Adjust VR1 to obtain a 5 dB separation.

6.9 FM TRACKING ADJUSTMENT

- **Connection Diagram**

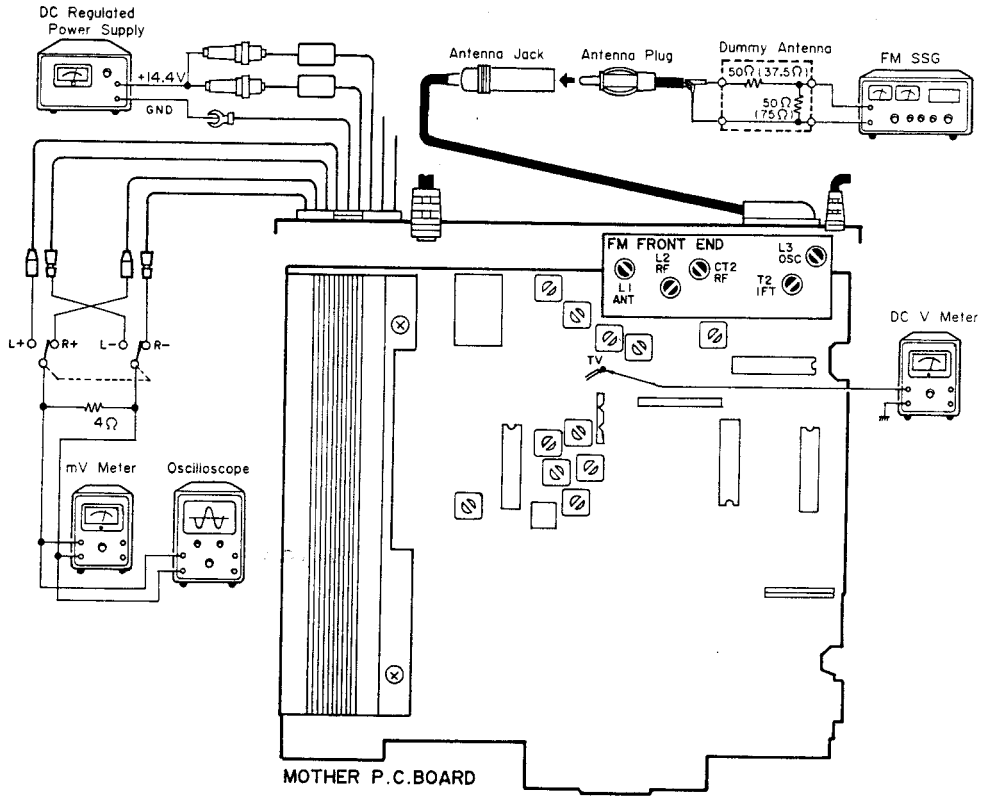


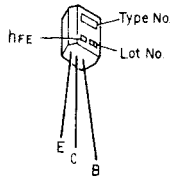
Fig. 24

- **To Adjust**

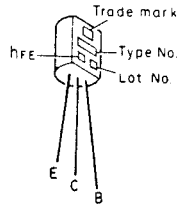
Frequency of FM SSG	Displayed Frequency	Adjusting Point	DC V Meter	mV Meter
1.	108 MHz	L3	8.0 ± 0.2V	
2.	87.5 MHz		2.2 ± 0.6V check	
3. 90 MHz (400 Hz, 100% modulation) output level 5 ~ 10 dB (μV)	90 MHz	L2		Maximum output
4. 106 MHz (400 Hz, 100% modulation) output level 5 ~ 10 dB (μV)	106 MHz	CT2		Maximum output
5. Repeat steps (3) and (4) alternately so that the mV meter indicates maximum output.				
6. 98 MHz (400 Hz, 100% modulation) output level 5 ~ 10 dB (μV)	98 MHz	L1, T2		Maximum output

• IC's and Transistors

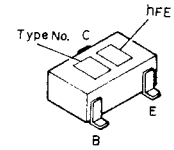
2SA1048
2SA1150
2SC1740S
2SC2458



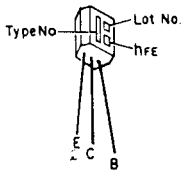
2SC2634NC



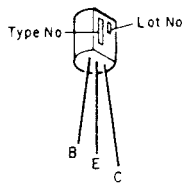
Part No.	Indication (Type No., hFE)
2SB709-AQ	AQ
2SB709-AR	AR
2SB709-AS	AS
2SC2712-LG	LG
2SC2712-LL	LL
2SC2712-LY	LY
2SD601-YQ	YQ
2SD601-YR	YR
2SD601-YS	YS
2SA1179-M5	M5
2SA1179-M6	M6



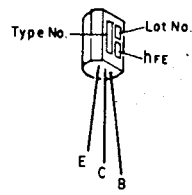
2SD1012



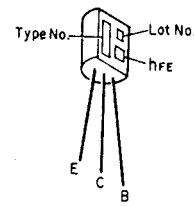
2SC2753



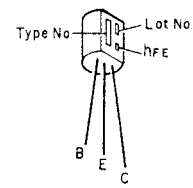
2SD1207



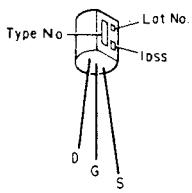
2SC2236



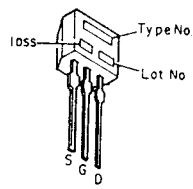
2SC2570



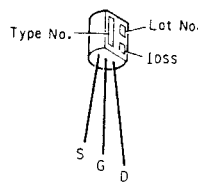
2SK163



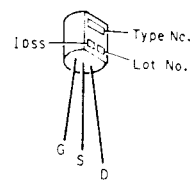
2SK330



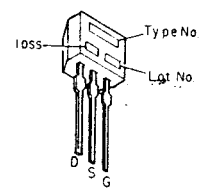
2SK30A



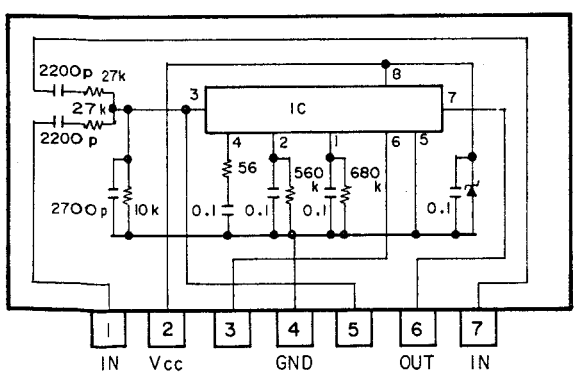
P003



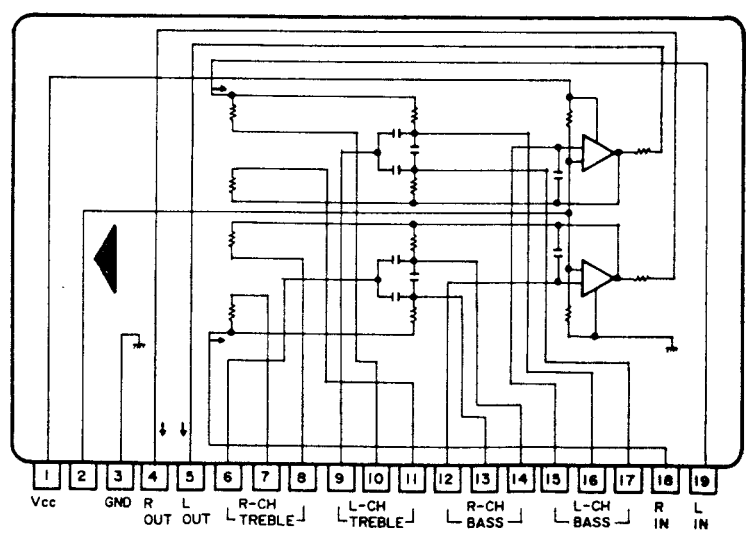
2SK241



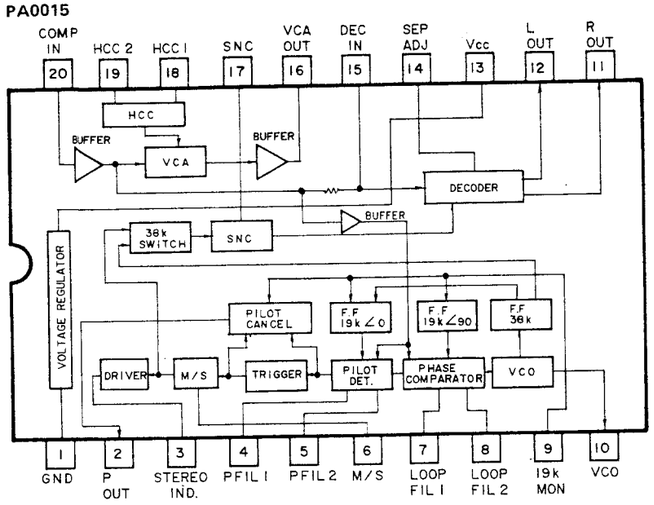
KHD501



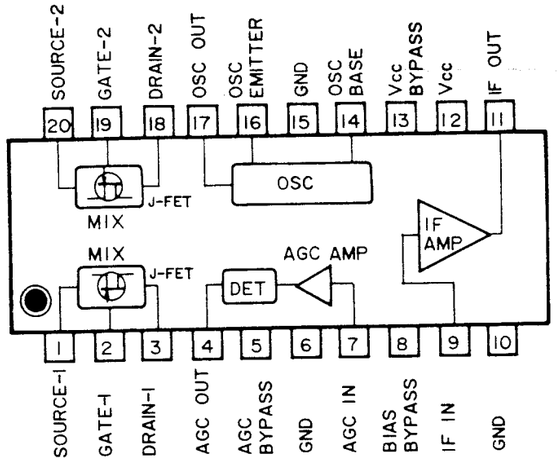
KHA108



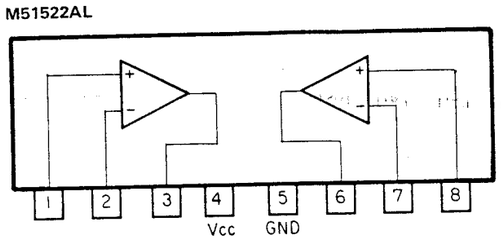
PA0015



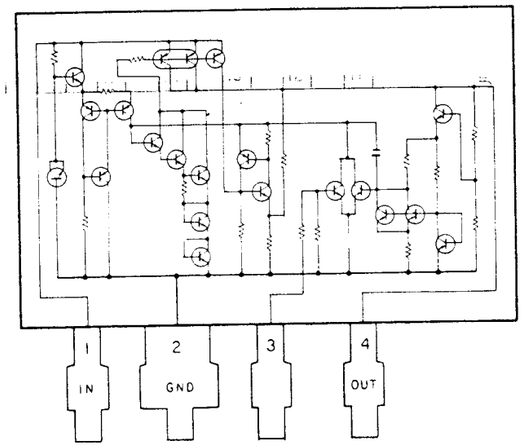
PA4009



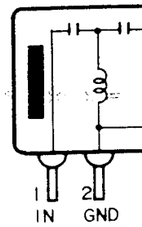
M51522AL



AN6540

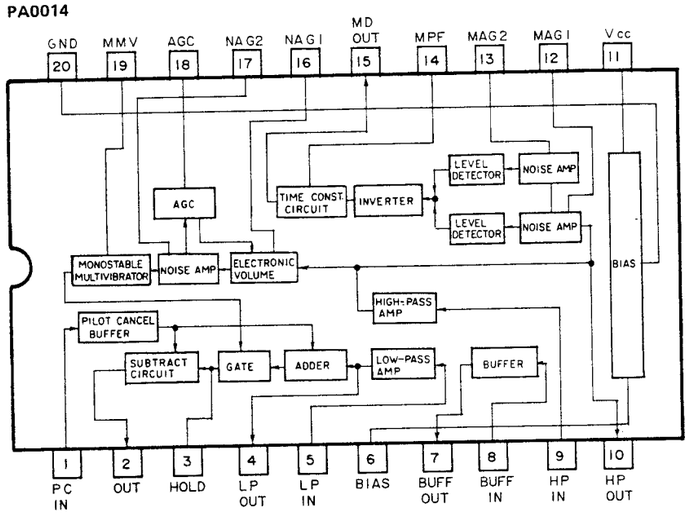


CWW-173



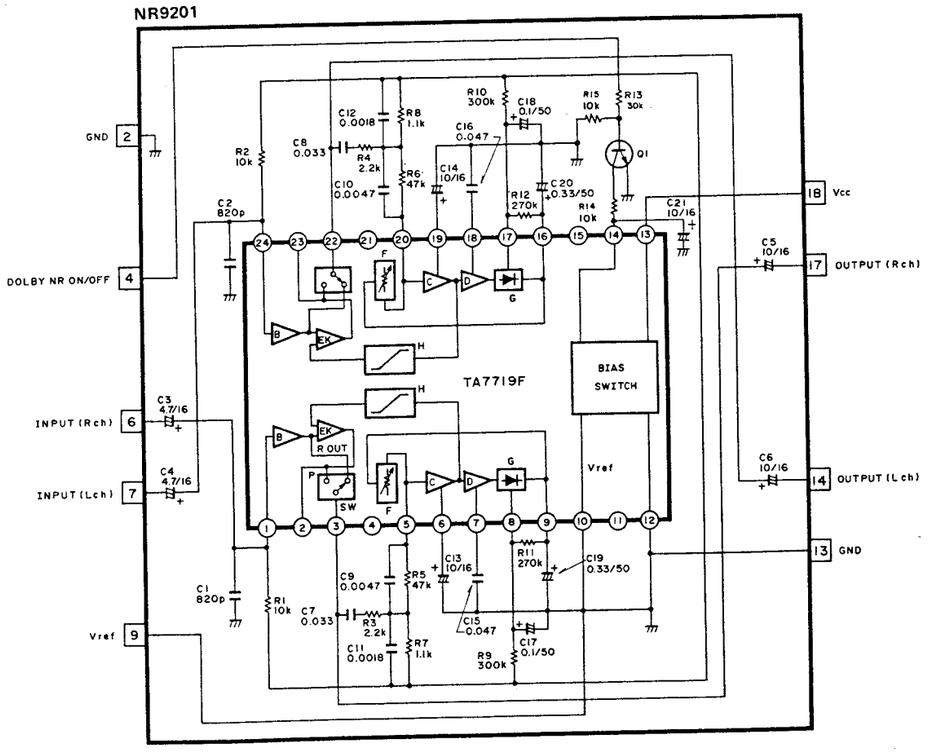
TA75

PA0014

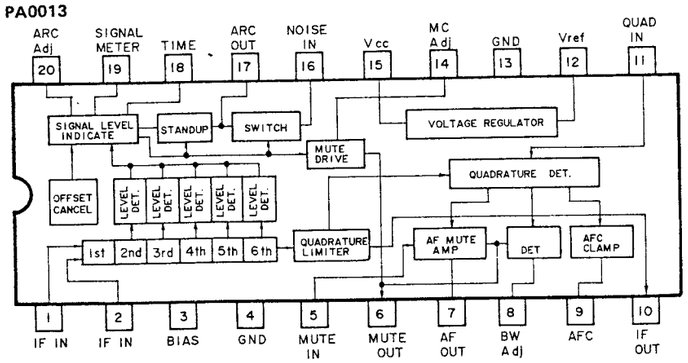


HA13001P

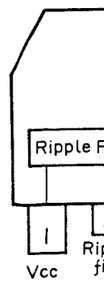
NR9201



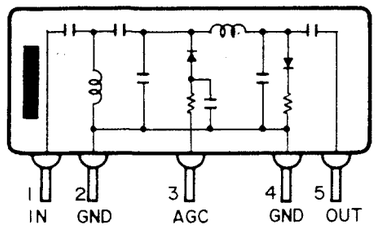
PA0013



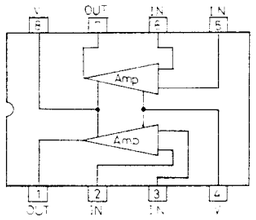
PA2014



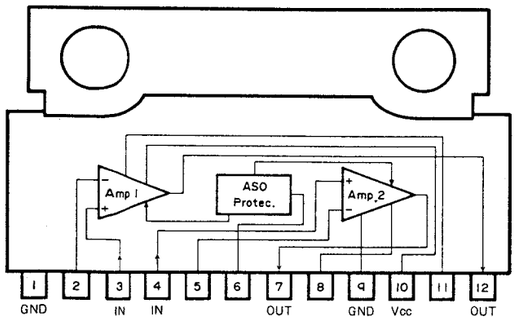
CWW-173



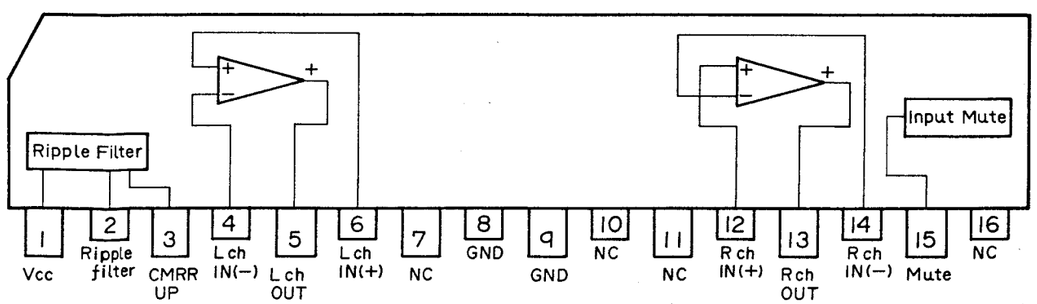
TA75558P



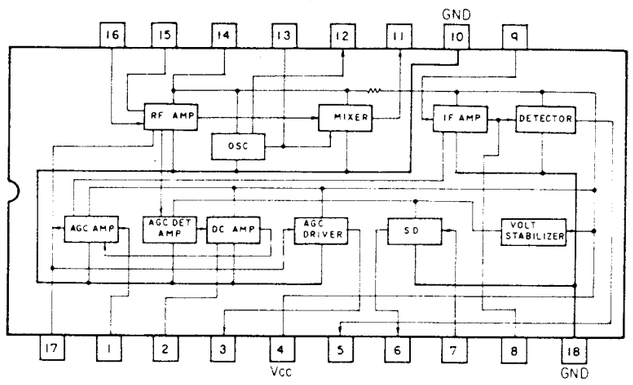
HA13001P



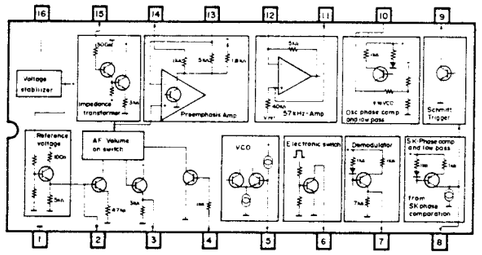
PA2014



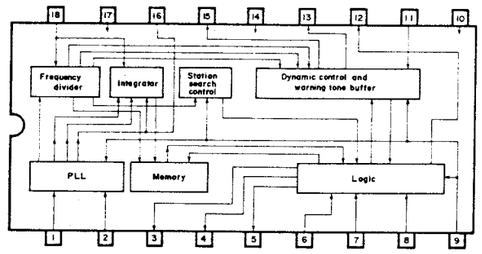
HA12434



S0280



S551



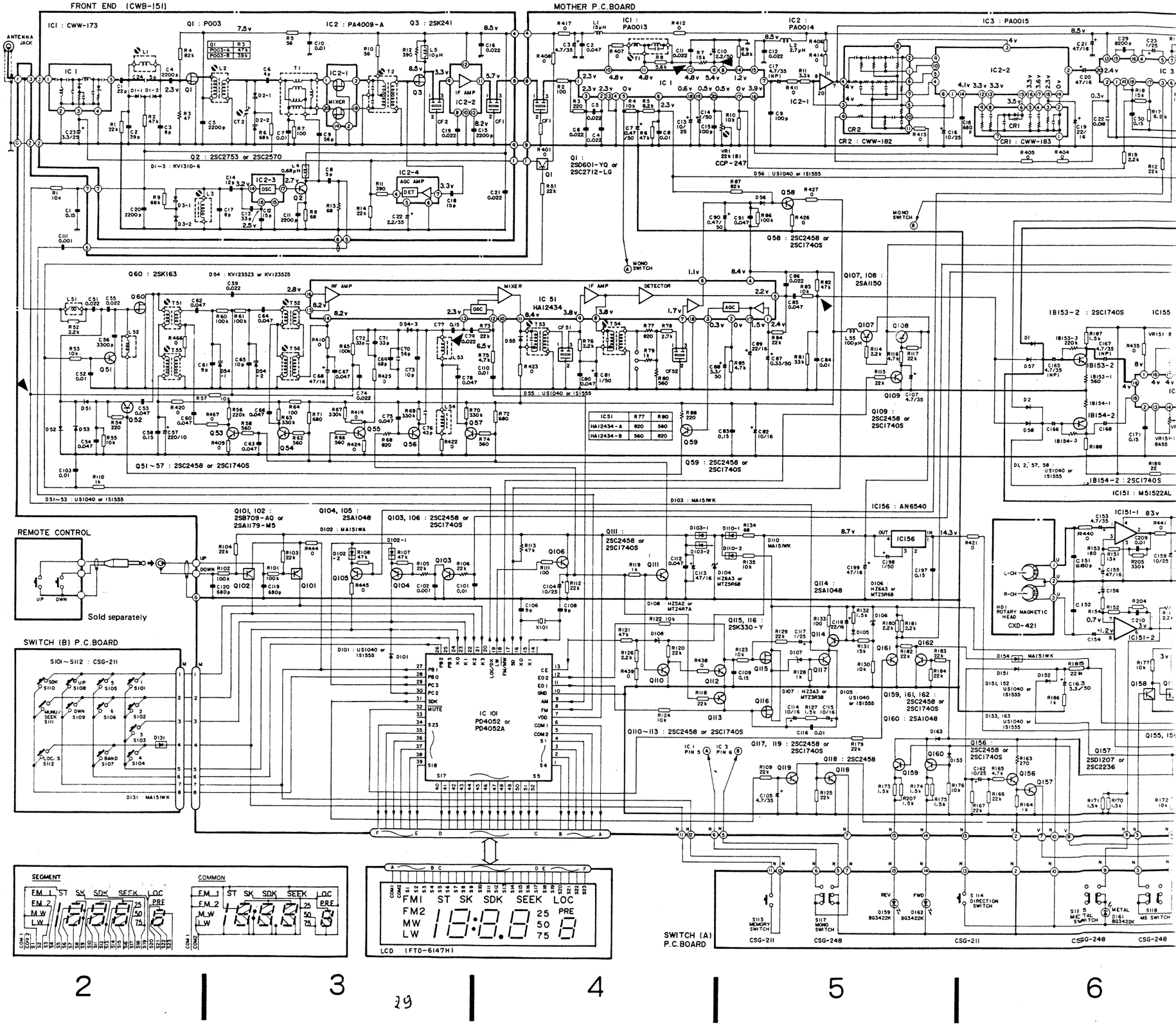
* PD4052

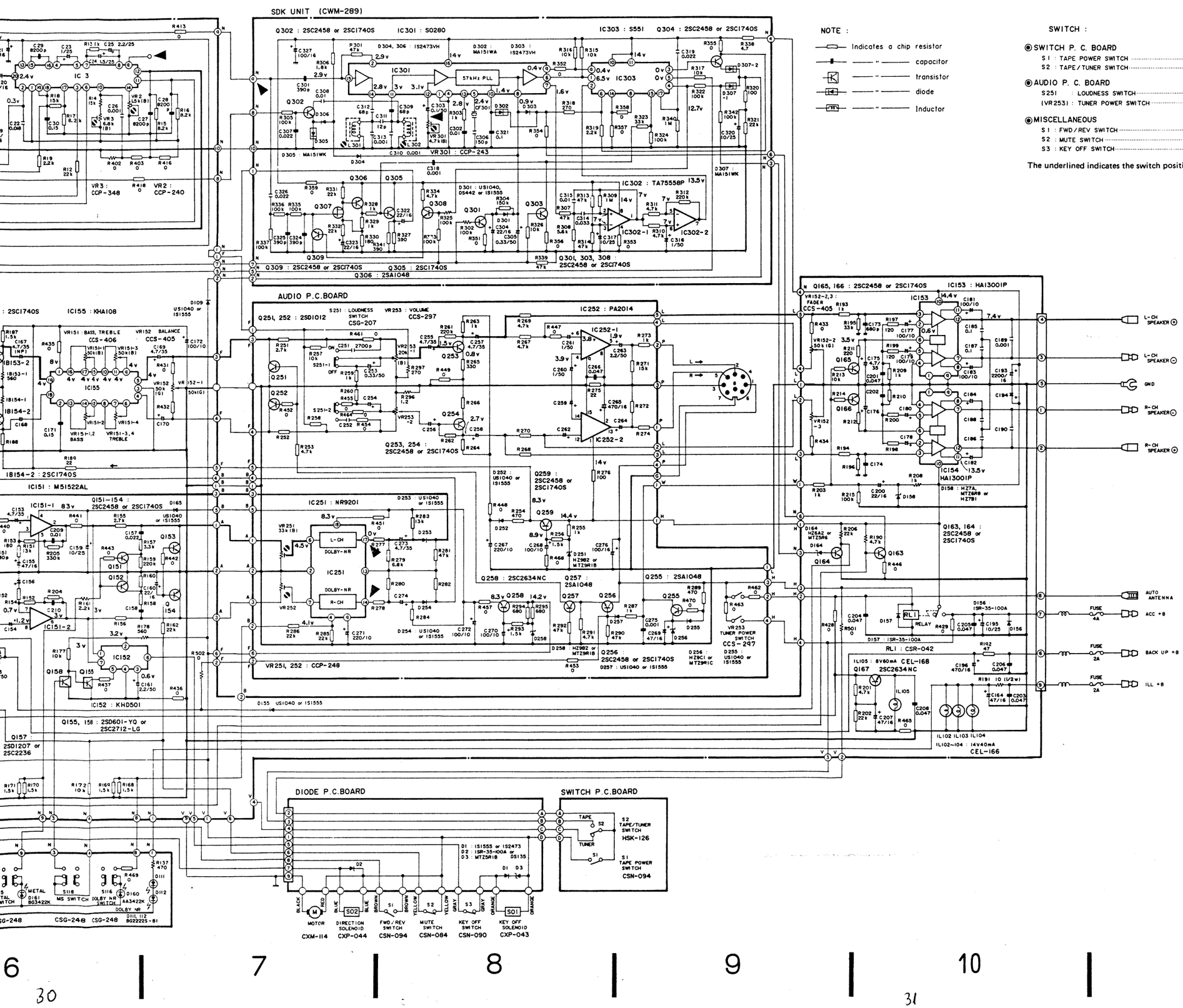
*IC's marked by *are MOS type.*
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

• PIN FUNCTIONS (PD4041)

Pin No.	Pin Name	I/O	Function and Operation
34 ~ 52 1 ~ 4	S23 ~ S5 S4 ~ S1	OUT	These are the segment signal output terminals to the LCD panel. Using the matrix of COMON 1 and COMON 2, up to an maximum of 46 dots can be display. The data output format will use PLA for the numerical figures. Symbols and letters data will be directly output from the data memory (RAM).
5 6	COM 2 COM 1	OUT	These are the common signal output terminals to the LCD panel. The three values of GND, 1/2VDD, and VDD (5ms intervals) will be output in 50 Hz cycles. The segment that registers and I VDD voltage differential between these terminals and S1 ~ S23 will light up.
7 33	VDD VDD		These are the power supply terminals for the device, supplying a voltage of 5V ± 10% when the device is operating. The voltage can be lowered to 2.5V when the internal data memory (RAM) is to be maintained (carry out CKSTP command). The device will be recept when a voltage of zero −4.5V is supplied to this terminal, and a program will start from address 0. **NOTE:** Since pin 7 and pin 33 are connected together inside the divice it is sufficient to supply the power voltage to one of these terminals.
8	FM	IN	This accepts the VCO output from 10 ~ 150 MHz (0.5 Vp-p MIN). This is divided down by 1/2 inside the device by using the pulse swallow method. It also features a built-in AC amplifier, and therefore the DC components should be removed from the signal by using a capacitor first before entering the signal into the device.
9	AM	IN	This accepts the VOC output from 0.5 ~ 50 MHz (0.3 Vp-p MIN). This is selected and goes active when the direct dividing method is used. It also features a built-in AC amplifier, and therefore the DC components should be removed from the signal by using a capacitor first before entering the signal into the device.
10	GND		GND Terminal
11 12	EO1 EO2	OUT	This is the charge pump output from the phase detector that forms the PLL. When the divided oscillation frequency is higher than the reference frequency, these terminals will output a high level signal. When the divided oscillation frequency is lower than the reference frequency, these terminals will output a low level signal. Since the same signal will be output from both EO1 and EO2, either terminal can be selected as desired.
13	CE	IN	This is the device select signal input terminal. This terminal should be set to high level when the device is to be operated normally, and set to low level when the device will not be used. However it will not accept an input under 134 μs.
14	NC		
15 16	XI X0	IN	This the quartz oscillator connection terminal to which is connected a 4.5 MHz quartz oscillator. Adjust the oscillation frequency (4.5 MHz) by monitoring terminal X0.
17	SD	IN	During auto tuning and SDK search, this input terminal detects whether a broadcast station has been received or not. It will stop the tuning when a high level input is received. (Read in SDK STP and AND for SDK search) However, an input must be received within 45ms after the PLL has locked. (Within 75ms for LW reception)
18 19	FM/$\overline{\text{MW}}$ LW	OUT	This is the FM/MW/LW select signal which is output from the device.
20	LOC/DX	OUT	This is the LOC/DX select signal which is output from the device. A high level signal will be output for the LOC mode.
21 ~ 24	K3 ~ K0	IN	These are the key return signal input terminals for an external key matrix.
25 ~ 28 29 30	PB3 ~ PB0 PC3 PC2	OUT	These are the key return signal source terminals, set to active high. The external diodes can be deleted.
31	SDK	OUT	High level signals from the device are output to this terminal for the SDK mode (Traffic information etc).
32	$\overline{\text{MUTE}}$	OUT	This muting output terminal, set to active low, eliminates the shock noise when the PLL lock is disengaged.

7. SCHEMATIC CIRCUIT DIAGRAM (KEH-8830SDK)





NOTE :

- Indicates a chip resistor
- " capacitor
- " transistor
- " diode
- " Inductor

SWITCH :

◉ SWITCH P. C. BOARD
- S1 : TAPE POWER SWITCH ..... ON — OFF
- S2 : TAPE / TUNER SWITCH ..... TAPE — TUNER

◉ AUDIO P. C. BOARD
- S251 : LOUDNESS SWITCH ..... ON — OFF
- (VR253) : TUNER POWER SWITCH ..... ON — OFF

◉ MISCELLANEOUS
- S1 : FWD / REV SWITCH ..... FWD — REV
- S2 : MUTE SWITCH ..... ON — OFF
- S3 : KEY OFF SWITCH ..... ON — OFF (EJECT)

The underlined indicates the switch position.

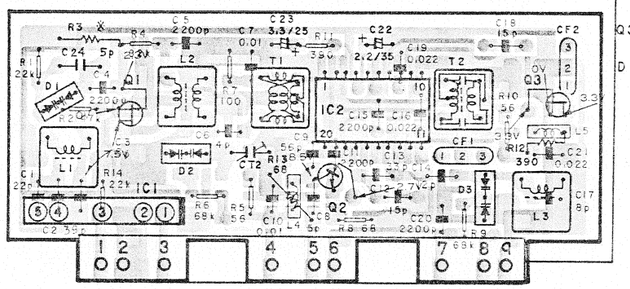
Fig. 25

8. CONNECTION DIAGRAM (KEH-8830SDK)

FRONT END(CWB-151)

IC,Q IC1 Q1 Q2 IC2 Q3

ADJ L1 L2 CT2 T2 L3



Q1	R3
P003-A	47k
P003-B	39k

Q3 : 2SK241-GR

D1 ~ 3 : KV1310-6

Front End IC2 IC1 : CWW-173 IC2 : PA4009-A Q1 : P003 Q2 : 2SC2570

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	0V				0V	3.3V		3.3V	0V	5.7V	8.5V	8.2V	3.2V	0V	2.5V	2.7V		0V	

REMOTO CONTROL

UP DWN

Sold separately

ANTENNA JACK

MOTHER

Q155 Q158 IC151 IC2 IC152 IC1 IC,Q Q154 Q152 Q153 Q151

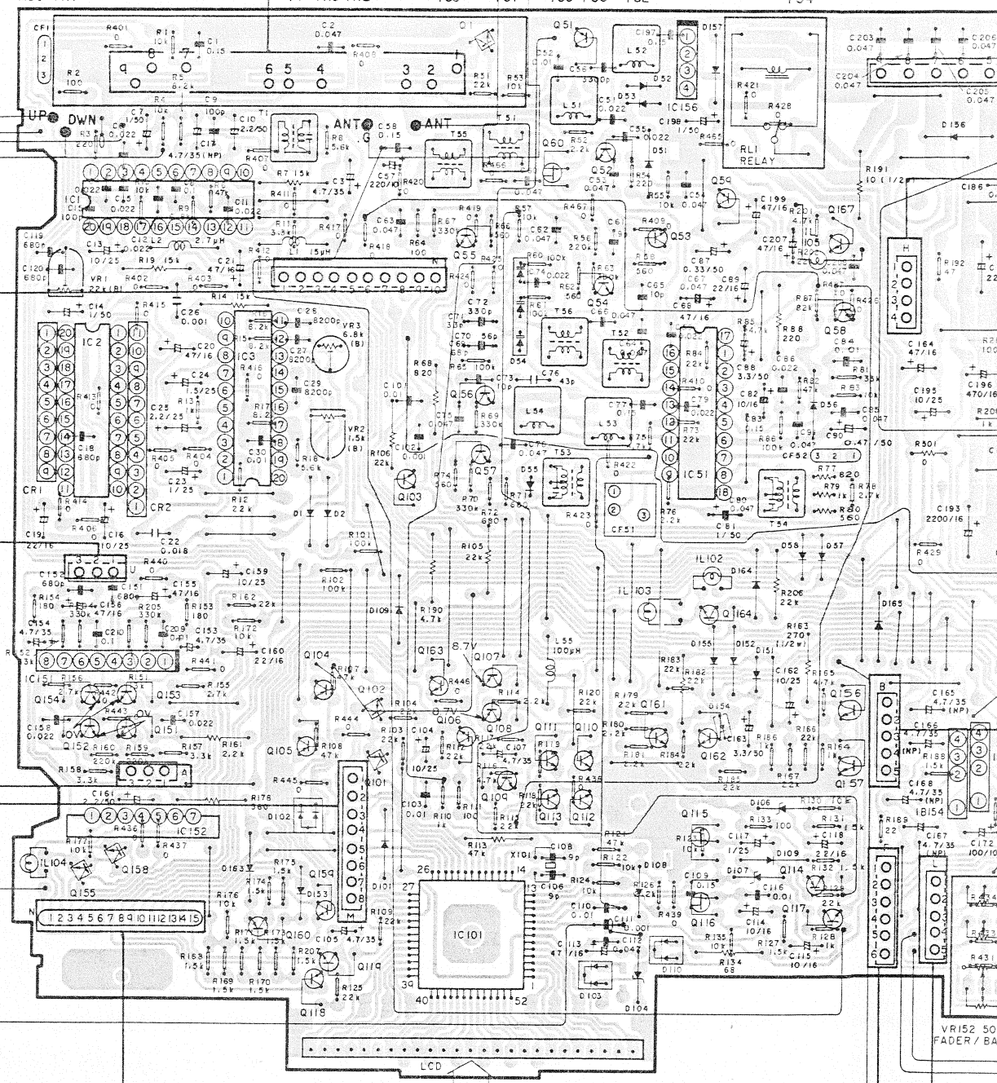
Q159 Q102 Q104 Q101 Q103 IC3 Q160 Q105 Q118 Q119

Q107 Q55 Q1 Q108 Q60 Q51 Q52 Q163 Q106 IC101 Q113 Q112

Q162 Q115 Q116 Q54 Q53 IC156 Q59 Q161 IC51

Q167 Q58 Q156 Q157 Q114 Q117

ADJ VR1 T1 VR3 VR2 T55 T51 T56 T53 T52 T54



UP DWN ANT ANT

RLI RELAY

VR152 50 FADER / BA

LCD

Q1 : 2SD601-YQ or 2SC2712-LG Q51 ~ 59, 103, 106, 109 ~ 113, 117, 119, 151 ~ 154, 156, 159, 161 ~ 166 : 2SC2458 or 2SC1740S Q60 : 2SK163 Q101, 102 : 2
Q104, 105, 114, 160 : 2SA1048 Q107, 108 : 2SA1150 Q115, 116 : 2SK330-Y Q155, 158 : 2SD601-YQ or 2SC2712-LG Q 157 : 2SD1207 or 2SC22

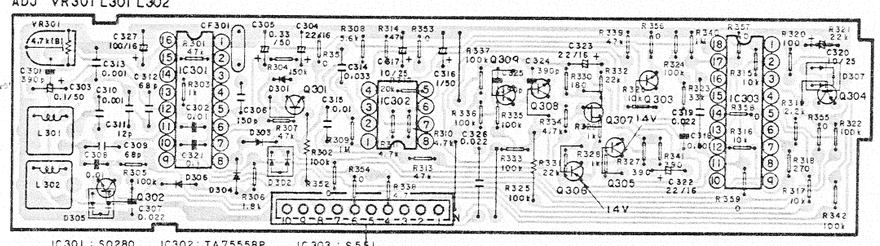
D1, 2, 51 ~ 53, 55 ~ 58, 101, 105, 109, 151 ~ 153, 155, 163 : US1040 or IS1555 D54 : KV1235Z3 or KV1235Z5 D102 : MA151WA D103, 110, 154 : M
D104, 106 : HZ6A3 or MTZ5R6B D107 : HZ3A3 or MTZ3R3B D108 : HZ5A2 or MTZ4R7A D156, 157 : ISR-35-100A D158 : HZ7A, MTZ

IC1 : PA0013 IC2 : PA0014 IC3 : PA0015 IC51 : HA12434 IC101 : PD4052 or PD4052A IC151 : M51522AL IC152 : KHD501 IC153, 154 : HA1300
IC156 : AN6540

SDK UNIT(CWM-289)

IC,Q Q302 IC301 Q301 IC302 Q309 Q306 Q305 Q303 IC303 Q304

ADJ VR301 L301 L302



IC301 : S0280 IC302 : TA75558P IC303 : S551

Q301 ~ 304, 308, 309 : 2SC2458 or 2SC1740S Q305 : 2SC1740S Q306 : 2SA1048 Q307 : 2SK30A-O

D301 : US1040, DS442 or IS1555 D302 : MA151WA D303, 304, 306 : IS2473VH D305, 307 : MA151WK

IC301(SDK Uint)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
0V	2.9V		0V	2.4V	6.5V	1.6V	0.9V	0.4V	1.4V	3V	3.1V	2.8V	2.8V	2.9V	1.4V

Q308 Q307

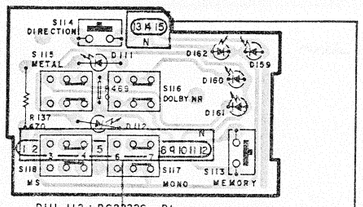
IC302

1	2	3	4	5	6	7	8
7V	7V	7V		7V	7V	13.5V	14V

IC303

1	2	3	4	5	9	10	11
6.5V	13.5V	0V	12.7V	0V	0.4V	14V	14V

SWITCH(A) P.C.BOARD

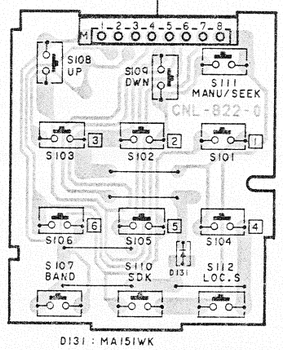


D111, 112 : BG2222S-BI

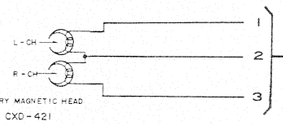
D159, 161, 162 : BG3422K

D160 : AA3422K

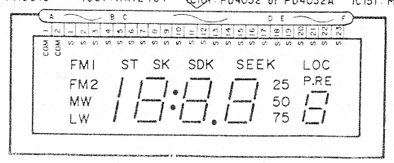
SWITCH(B) P.C.BOARD



D131 : MA151WK



HDJ ROTARY MAGNETIC HEAD CXD-421



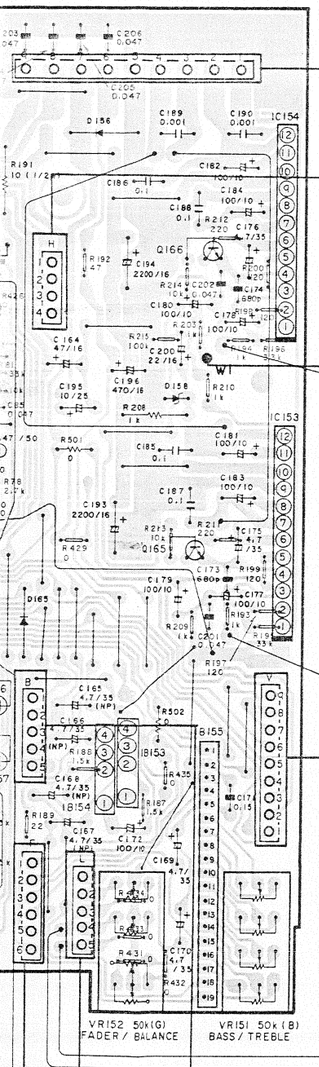
LCD (FTD-6147H)

7 8 9 10 11 12

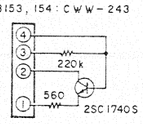
MOTHER P.C.BOARD

Q58
6 Q157
17

IC155 IC154
Q165 Q166 IC153



IB153, 154 : CWW-243



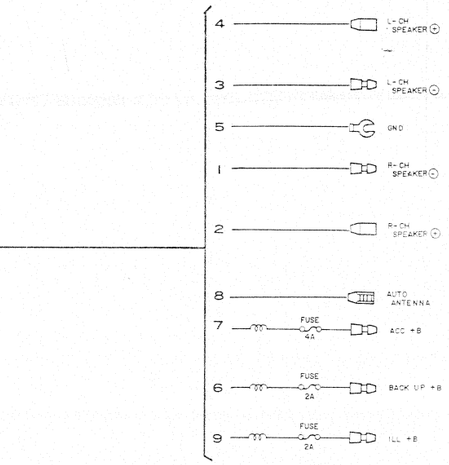
2SK163 Q101, 102 : 2SB709-AQ or 2SA1179-M5 Q118 : 2SC2458
Q157 : 2SD1207 or 2SC2236 Q167 : 2SC2634NC

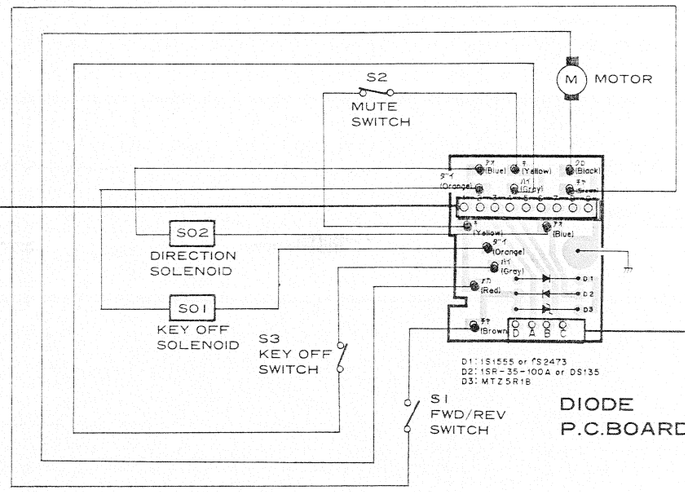
D103, 110, 154 : MA151WK D165 : US1040 or IS1555
D158 : HZ7A, MTZ6R8 or HZ7BI D164 : HZ6A2 or MTZ5R6
IC153, 154 : HA13001P IC155 : KHA108

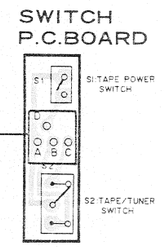
MOTHER P.C.BOARD

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
IC1	2.3V	2.3V	2.3V	0V	0V	2.3V		5.4V	5.4V	4.8V	4.8V	4.8V	0V	1.2V	8.5V	3.9V	0V	0.6V	0.5V	0.5V
IC2			4V				4V	4V			8.5V	3.3V	3.3V	4.1V	3.5V	3.3V	3.6V	2.3V	0V	0V
IC3	0V	0.3V											8.5V							2.4V
IC51	2.4V	0V	0.3V	8.4V	2.2V	1.1V	1.7V	3.8V	3.8V	0V	8.4V		2.3V	8.2V	8.2V	2.8V	1.5V	0V		
IC151	1.2V	3V	0.7V	8.3V	0V	3V	0.7V	1.2V												
IC152	3V	3.2V	0.6V	0V			3V													
IC153 IC154	0V	0.6V		0V		3.5V			0V	14.4V	13.3V	7.4V								
IC155	8V		0V	4V	4V	4V	4V	4V	4V	4V	4V	4V	4V	4V	4V	4V	4V	4V	4V	
IC156	14.3V	0V		8.7V																

A





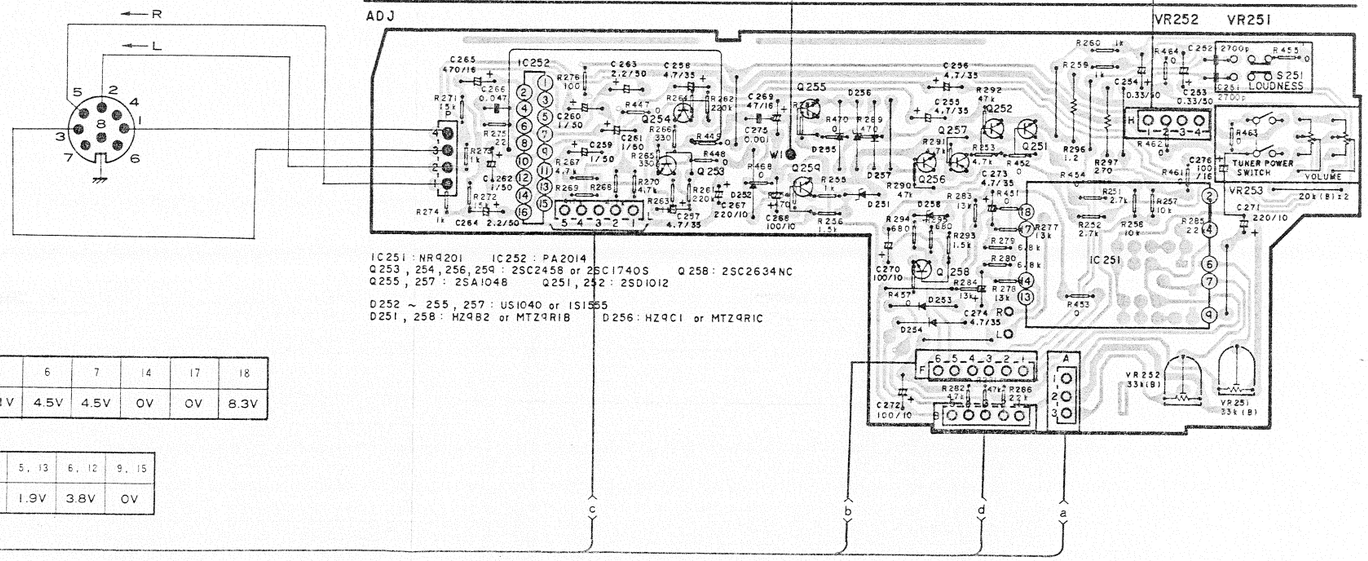


B

	Q253	Q254	Q258	Q259
B	1.5V	1.5V		8.9V
C	2.7V	2.7V	14.2V	14.4V
E	0.8V	0.8V	8.3V	8.3V

C

AUDIO P.C.BOARD



IC251 : NR9201 IC252 : PA2014
Q253, 254, 256, 259 : 2SC2458 or 2SC1740S Q258 : 2SC2634NC
Q255, 257 : 2SA1048 Q251, 252 : 2SD1012

D252 ~ 255, 257 : US1040 or IS1555
D251, 258 : HZ9B2 or MTZ9R1B D256 : HZ9C1 or MTZ9R1C

IC251

2	4	6	7	14	17	18
0V	4.1V	4.5V	4.5V	0V	0V	8.3V

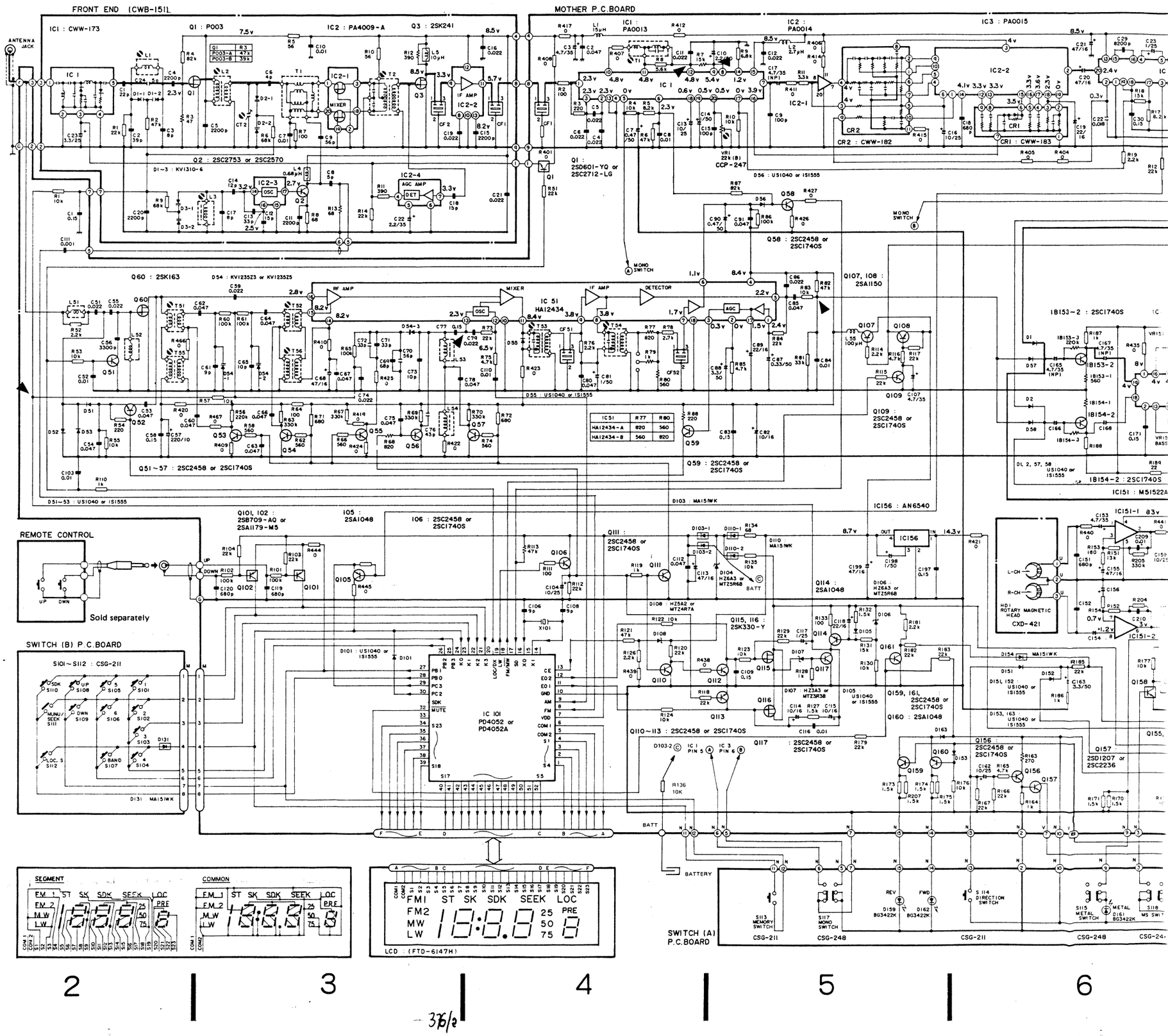
IC252

1	4, 14	5, 13	6, 12	9, 15
1.4V	3.9V	1.9V	3.8V	0V

D

Fig. 26

9. SCHEMATIC CIRCUIT DIAGRAM (KEH-8830)



NOTE :

- Indicates a chip resistor
- " capacitor
- " transistor
- " diode
- " Inductor

SWITCH :

◉SWITCH P. C. BOARD
- S1 : TAPE POWER SWITCH ..... ON — OFF
- S2 : TAPE / TUNER SWITCH ..... TAPE — TUNER

◉AUDIO P. C. BOARD
- S251 : LOUDNESS SWITCH ..... ON — OFF
- (VR253) : TUNER POWER SWITCH ..... ON — OFF

◉MISCELLANEOUS
- S1 : FWD / REV SWITCH ..... FWD — REV
- S2 : MUTE SWITCH ..... ON — OFF
- S3 : KEY OFF SWITCH ..... ON — OFF (EJECT)

The underlined indicates the switch position.

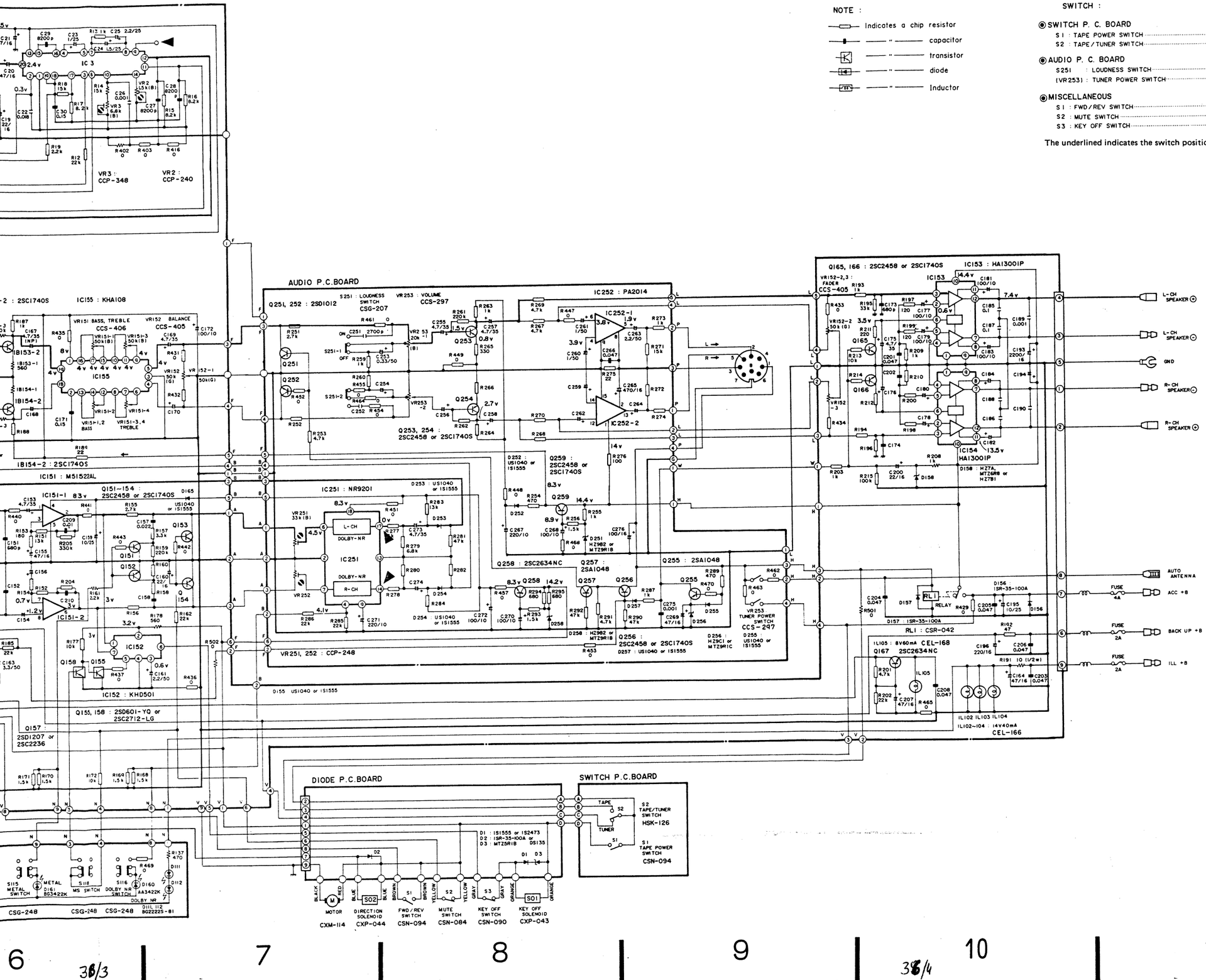
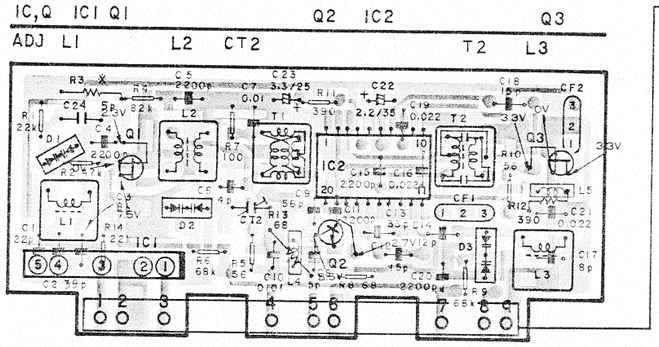


Fig. 27

10. CONNECTION DIAGRAM (KEH-8830)

FRONT END(CWB-151)



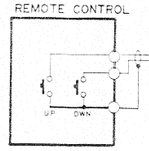
Q1	R3
P003-A	47k
P003-B	39k

IC1 : CWW-173 IC2 : PA4009-A Q1 : P003 Q2 : 2SC2570
Q3 : 2SK241-GR D1~3 : KV1310-6

Front End IC2

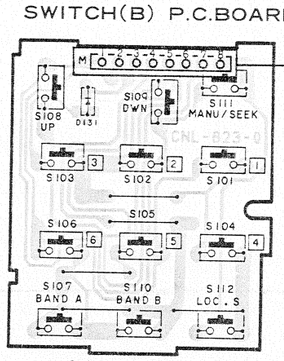
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	0V				0V	3.3V		3.3V	0V	5.7V	8.5V	8.2V	3.2V	0V	2.5V	2.7V		0V	

REMOTE CONTROL

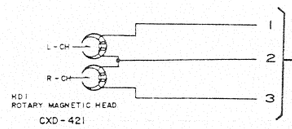


Sold separately

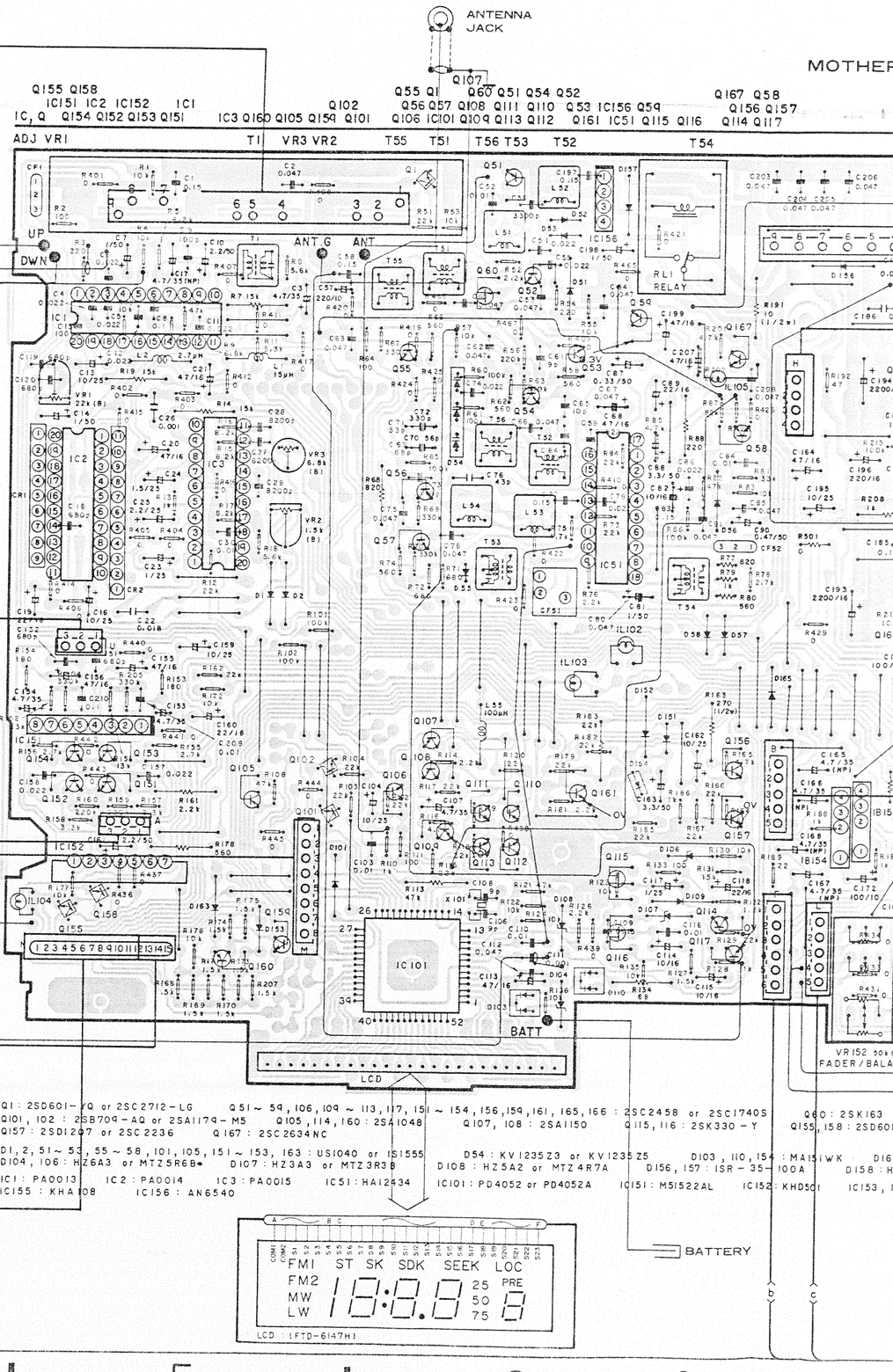
SWITCH(B) P.C.BOARD



D131 : MA151WK



MDI
ROTARY MAGNETIC HEAD
CXD-421



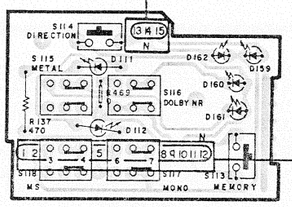
Q1 : 2SD601-Q or 2SC2712-LG Q51~59, 106, 109~113, 117, 151~154, 156, 159, 161, 165, 166 : 2SC2458 or 2SC1740S Q60 : 2SK163
Q101, 102 : 2SB709-AQ or 2SA1179-M5 Q105, 114, 160 : 2SA1048 Q107, 108 : 2SA1150 Q115, 116 : 2SK330-Y Q155, 158 : 2SD601
Q157 : 2SD1207 or 2SC2236 Q167 : 2SC2634NC

D1, 2, 51~53, 55~58, 101, 105, 151~153, 163 : US1040 or IS1555 D54 : KV1235Z3 or KV1235Z5 D103, 110, 154 : MA151WK D16
D104, 106 : HZ6A3 or MTZ5R6B D107 : HZ3A3 or MTZ3R3B D108 : HZ5A2 or MTZ4R7A D156, 157 : ISR-35-100A D158 : H

IC1 : PA0013 IC2 : PA0014 IC3 : PA0015 IC51 : HA12434 IC101 : PD4052 or PD4052A IC151 : M51522AL IC152 : KHD501 IC153,
IC155 : KHA408 IC156 : AN6540

BATTERY

SWITCH(A) P.C.BOARD



D111, 112 : BG2222S-BI
D159, 161, 162 : BG3422K
D160 : AA3422K

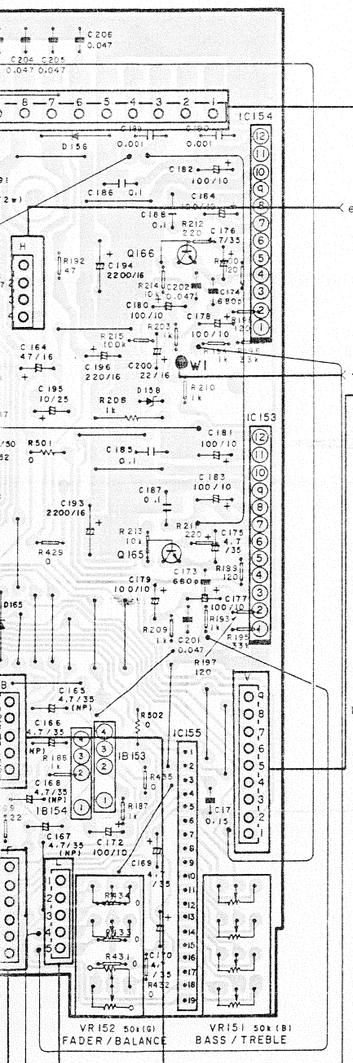
43/1 43/2

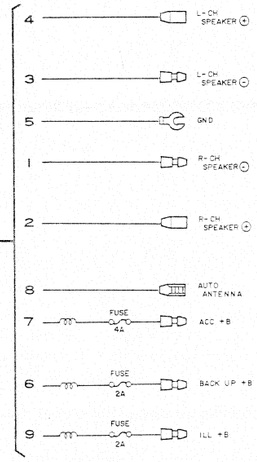
7 | 8 | 9 | 10 | 11 | 12

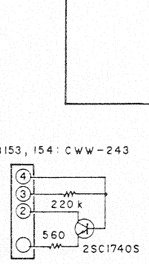
MOTHER P.C.BOARD

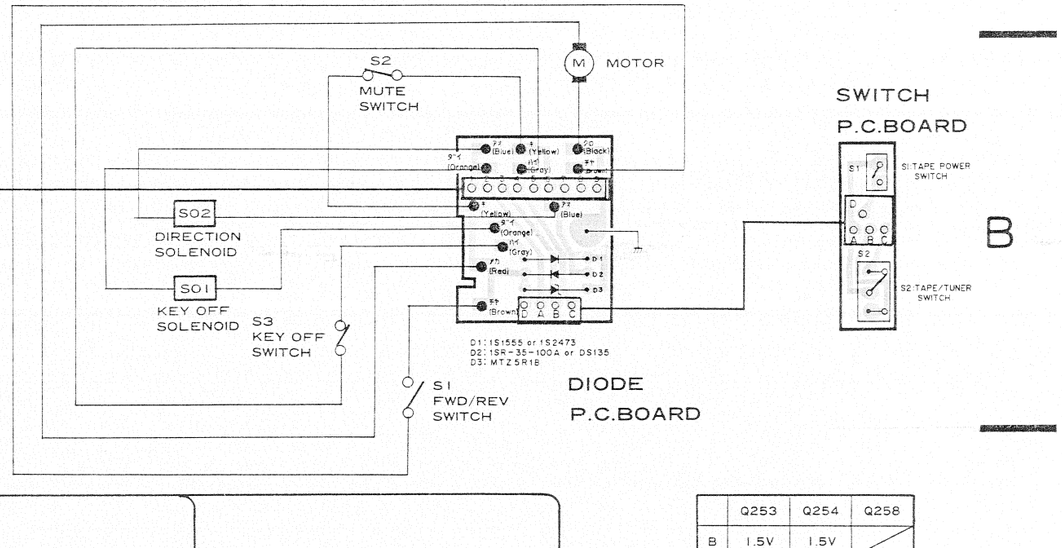
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
IC1	2.3V	2.3V	2.3V	0V	0V	2.3V		5.4V	5.4V	4.8V	4.8V	4.8V	0V	1.2V	8.5V	3.9V	0V	0.6V	0.5V	0.5V
IC2			4V				4V	4V			8.5V	3.3V	3.3V	4.1V	3.5V	3.3V	3.6V	2.3V	0V	0V
IC3	0V	0.3V											8.5V							2.4V
IC51	2.4V	0V	0.3V	8.4V	2.2V	1.1V	1.7V	3.8V	3.8V	0V	8.4V		2.3V	8.2V	8.2V	2.8V	1.5V	0V		
IC151	1.2V	3V	0.7V	8.3V	0V	3V	0.7V	1.2V												
IC152	3V	3.2V	0.6V	0V			3V													
IC153 IC154	0V	0.6V		0V		3.5V			0V	14.4V	13.3V	7.4V								
IC155	8V		0V	4V	4V	4V	4V	4V	4V	4V	4V	4V	4V	4V	4V	4V	4V	4V	4V	
IC156	14.3V	0V		8.7V																

A







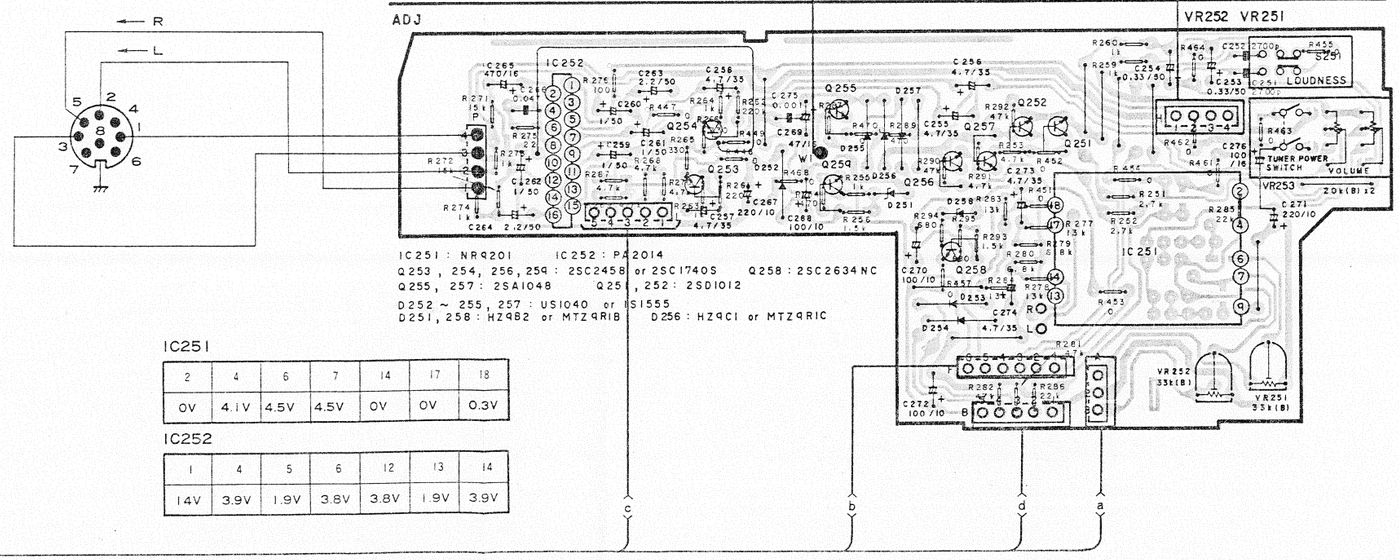


B

	Q253	Q254	Q258
B	1.5V	1.5V	
C	2.7V	2.7V	14.2V
E	0.8V	0.8V	8.3V

C

AUDIO P.C.BOARD



IC251 : NR9201 IC252 : PA2014
Q253, 254, 256, 259 : 2SC2458 or 2SC1740S Q258 : 2SC2634NC
Q255, 257 : 2SA1048 Q251, 252 : 2SD1012
D252 ~ 255, 257 : US1040 or 1S1555
D251, 258 : HZ9B2 or MTZ9R1B D256 : HZ9C1 or MTZ9R1C

IC251

2	4	6	7	14	17	18
0V	4.1V	4.5V	4.5V	0V	0V	0.3V

IC252

1	4	5	6	12	13	14
14V	3.9V	1.9V	3.8V	3.8V	1.9V	3.9V

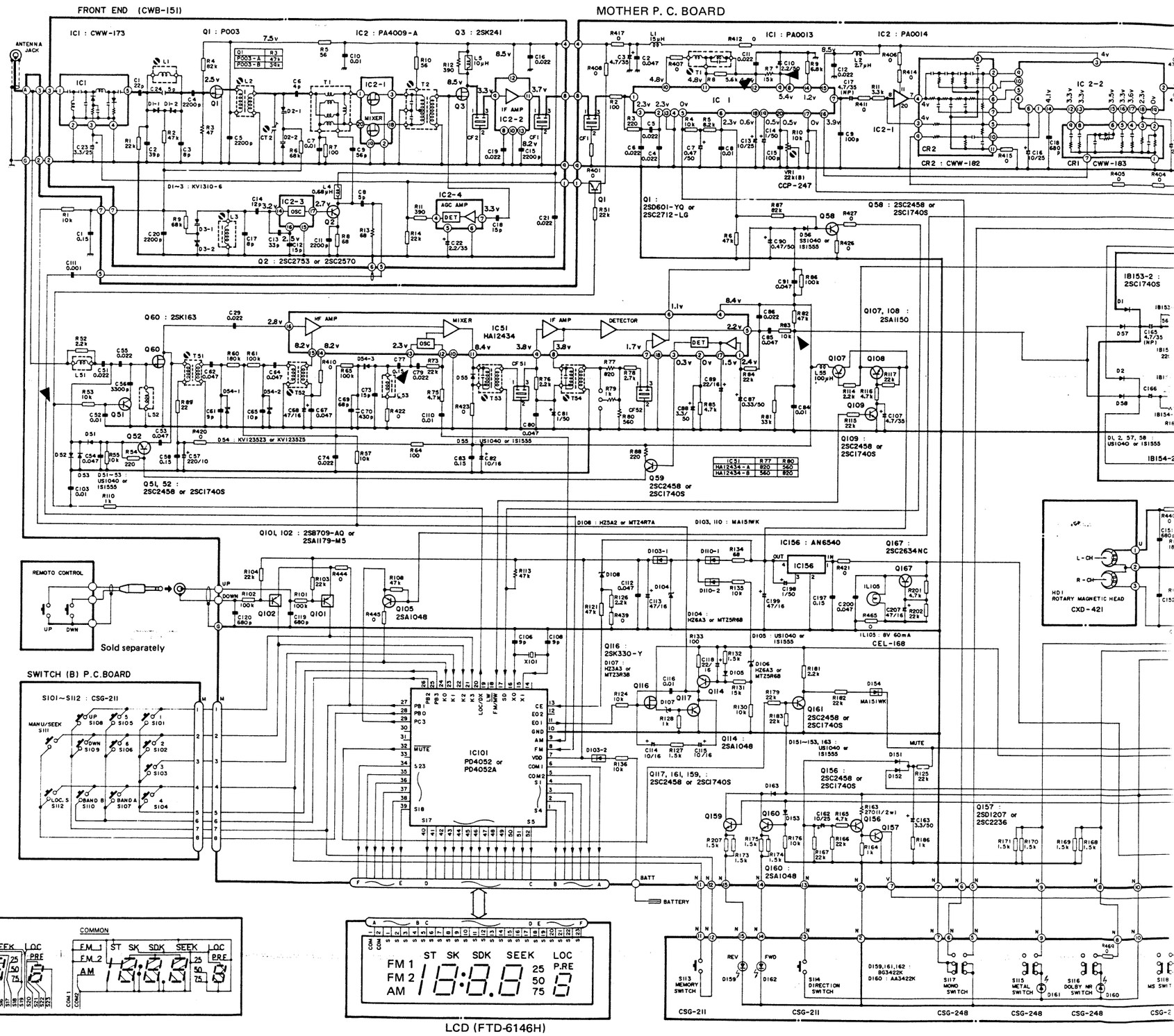
D

Q60 : 2SK163
Q155, 158 : 2SD601-YQ or 2SC2712-LG

D4 : MA151WK D165 : US1040 or 1S1555
-100A D158 : HZ7A, MTZ6R8 or HZ7B1
2 : KHD501 IC153, 154 : HA13001P

Fig. 28

11. SCHEMATIC CIRCUIT DIAGRAM (KEH-8800)



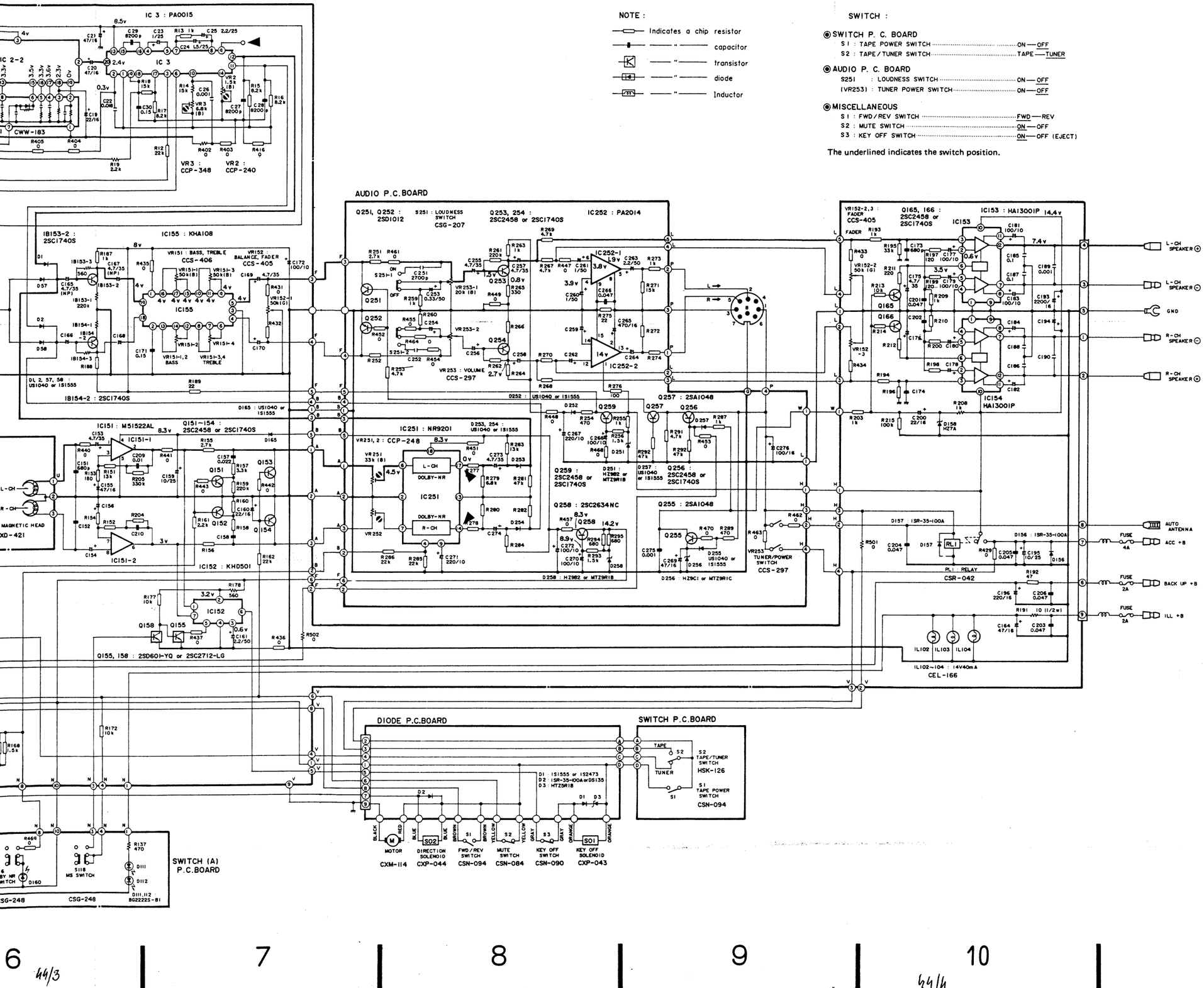
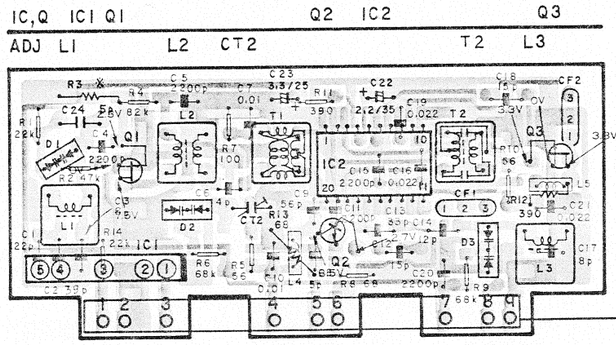

NOTE :
Indicates a chip resistor
" capacitor
" transistor
" diode
" Inductor
SWITCH :
SWITCH P. C. BOARD
S1 : TAPE POWER SWITCH ..... ON — OFF
S2 : TAPE / TUNER SWITCH ..... TAPE — TUNER
AUDIO P. C. BOARD
S251 : LOUDNESS SWITCH ..... ON — OFF
(VR253) : TUNER POWER SWITCH ..... ON — OFF
MISCELLANEOUS
S1 : FWD / REV SWITCH ..... FWD — REV
S2 : MUTE SWITCH ..... ON — OFF
S3 : KEY OFF SWITCH ..... ON — OFF (EJECT)
The underlined indicates the switch position.
AUDIO P.C.BOARD
IC 3 : PA0015
IC 2-2
CWW-183
VR3 : CCP-348
VR2 : CCP-240
IB153-2 : 2SC1740S
IC155 : KHA108
VR151 : BASS, TREBLE CCS-406
VR152 BALANCE, FADER CCS-405
IB154-2 : 2SC1740S
DL 2, 57, 58 : US1040 or 1S1555
D165 : US1040 or 1S1555
Q251, Q252 : 2SD1012
S251 : LOUDNESS SWITCH CSG-207
Q253, 254 : 2SC2458 or 2SC1740S
IC252 : PA2014
VR253 : VOLUME CCS-297
D252 : US1040 or 1S1555
Q257 : 2SA1048
Q256 : 2SC2458 or 2SC1740S
Q259 : 2SC2458 or 2SC1740S
Q255 : 2SA1048
Q258 : 2SC2634NC
D253, 254 : US1040 or 1S1555
D259 : US1040 or 1S1555
D251 : HZ9B2 or MTZ9R1B
D258 : HZ9B2 or MTZ9R1B
D256 : HZ9C1 or MTZ9R1C
IC251 : NR9201
VR251, 2 : CCP-248
IC151 : M51522AL
Q151~154 : 2SC2458 or 2SC1740S
IC151-1
IC151-2
IC152 : KHD501
Q155, 158 : 2SD601-YQ or 2SC2712-LG
VR152-2,3 : FADER CCS-405
Q165, 166 : 2SC2458 or 2SC1740S
IC153 : HAI3001P 14.4v
IC154 HAI3001P
D157 : 1SR-35-100A
RL1 : RELAY CSR-042
IL102~104 : 14V40mA CEL-166
L-CH SPEAKER
L-CH SPEAKER
GND
R-CH SPEAKER
R-CH SPEAKER
AUTO ANTENNA
FUSE 4A ACC +B
FUSE 2A BACK UP +B
FUSE 2A ILL +B
DIODE P.C.BOARD
D1 : 1S1555 or 1S2473
D2 : 1SR-35-100A or DS135
D3 : HTZ5R1B
MOTOR CXM-114
DIRECTION SOLENOID CXP-044
FWD / REV SWITCH CSN-094
MUTE SWITCH CSN-084
KEY OFF SWITCH CSN-090
KEY OFF SOLENOID CXP-043
SWITCH P.C.BOARD
S2 TAPE/TUNER SWITCH HSK-126
S1 TAPE POWER SWITCH CSN-094
SWITCH (A) P.C.BOARD
S118 MS SWITCH
CSG-248
8622225-81

Fig. 29

12. CONNECTION DIAGRAM (KEH-8800)

FRONT END(CWB-151)



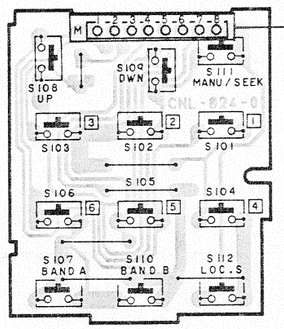
Q1	R3
P003-A	47k
P003-B	39k

IC1 : CWW-173 IC2 : PA4009-A Q1 : P003 Q2 : 2SC2570
Q3 : 2SK241-GR D1 ~ 3 : KV1310-6

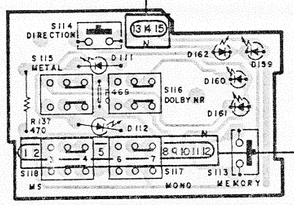
Front End IC2

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	0V				0V	3.3V		3.3V	0V	5.7V	8.5V	8.2V	3.2V	0V	2.5V	2.7V		0V	

SWITCH(B) P.C.BOARD

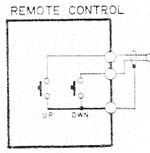


SWITCH(A) P.C.BOARD

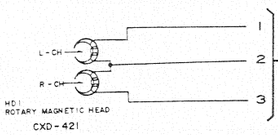


D111, 112 : BG2222S-BI
D159, 161, 162 : BG3422K
D160 : AA3422K

REMOTE CONTROL

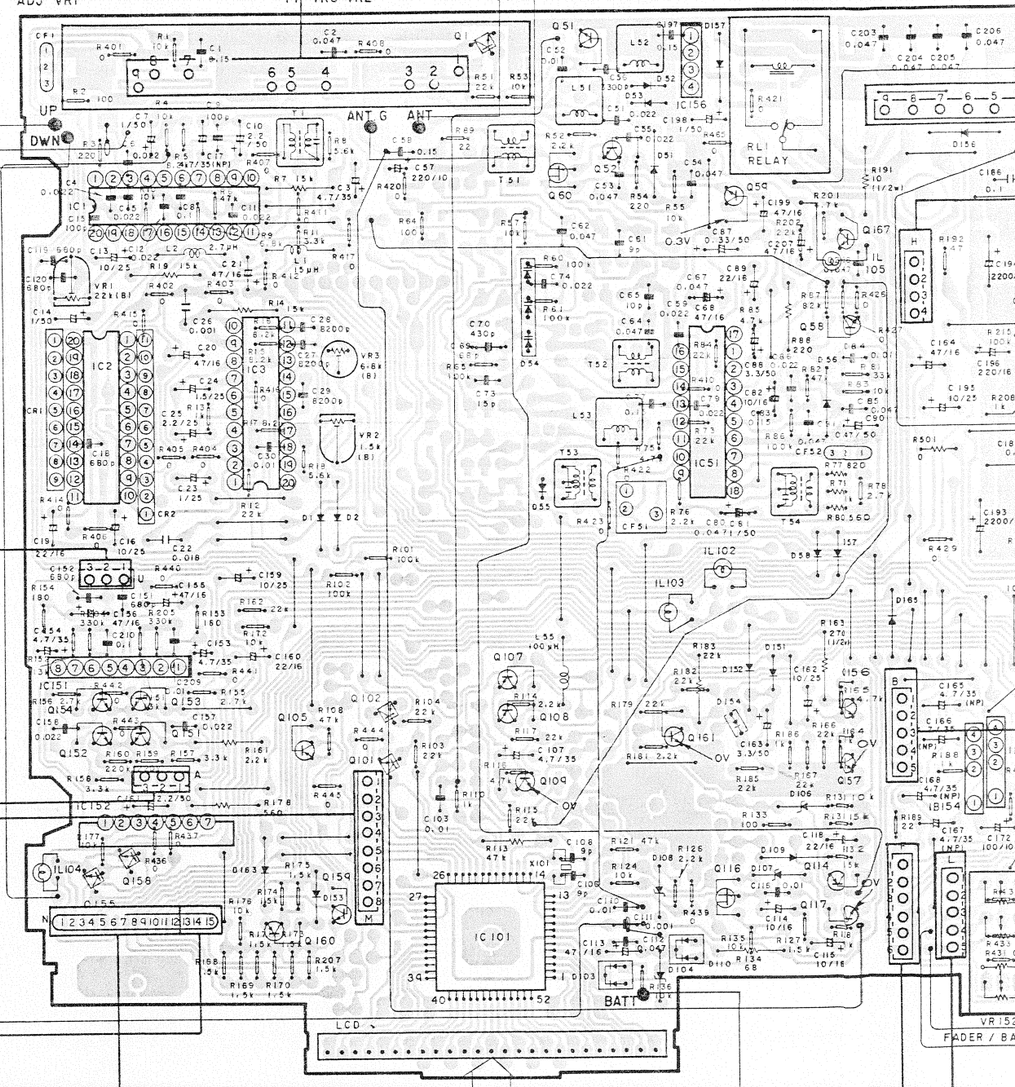


Sold separately



ANTENNA JACK

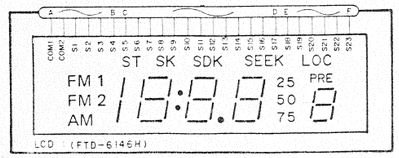
MOTHER P.C.BOARD



Q1 : 2SD601-YQ or 2SC2712-LG Q51, 52, 58, 59, 109, 117, 151 ~ 154, 156, 159, 161, 165, 166 : 2SC2458 or 2SC1740S Q60 : 2SK163
Q101, 102 : 2SB709-AQ or 2SA1179-M5 Q105, 114, 160 : 2SA1048 Q107, 108 : 2SA1150 Q116 : 2SK331-Y Q155, 158 : 2S
Q157 : 2SD1207 or 2SC2236 Q167 : 2SC2634NC

D1, 2, 51 ~ 58, 55 ~ 58, 105, 151 ~ 153, 163 : US1040 or IS1555 D54 : KV1235Z3 or KV1235Z5 D103, 110, 154 : MA151WK
D104, 106 : HZ6A3 or MTZ5R6B D107 : HZ3A3 or MTZ3R3B D108 : HZ5A2 or MTZ4R7A D156, 157 : ISR-35-100A D

IC1 : PA0013 IC2 : PA0014 IC3 : PA0015 IC51 : HA12484 IC101 : PD4052 or PD4052A IC151 : M51522AL IC152 : KHD501 IC
IC155 : KHA1108 IC156 : AN6540



BATTERY

MOTHER P.C.BOARD

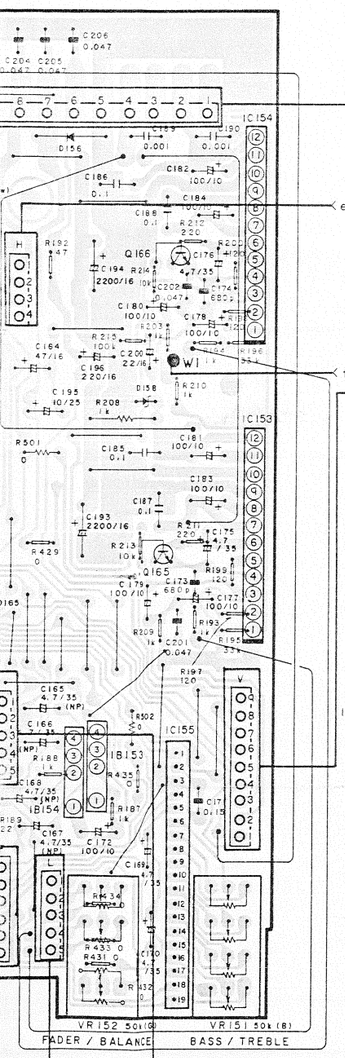
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
IC1	2.3V	2.3V	2.3V	0V	0V	2.3V		5.4V	5.4V	4.8V	4.8V	4.8V	0V	1.2V	8.5V	3.9V	0V	0.6V	0.5V	0.5V
IC2			4V				4V	4V			8.5V	3.3V	3.3V	4.1V	3.5V	3.3V	3.6V	2.3V	0V	0V
IC3	0V	0.3V											8.5V							2.4V
IC51	2.4V	0V	0.3V	8.4V	2.2V	1.1V	1.7V	3.8V	3.8V	0V	8.4V		2.3V	8.2V	8.2V	2.8V	1.5V	0V		
IC151	1.2V	3V	0.7V	8.3V	0V	3V	0.7V	1.2V												
IC152	3V	3.2V	0.6V	0V			3V													
IC153 IC154	0V	0.6V		0V		3.5V			0V	14.4V	13.3V	7.4V								
IC155	8V		0V	4V	4V	4V	4V	4V	4V	4V	4V	4V	4V	4V	4V	4V	4V	4V	4V	
IC156	14.3V	0V		8.7V																

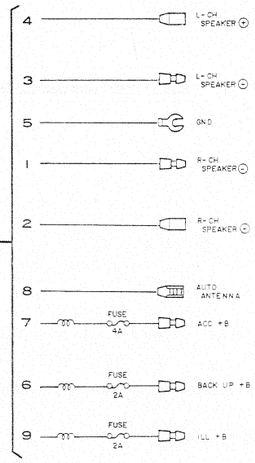
A

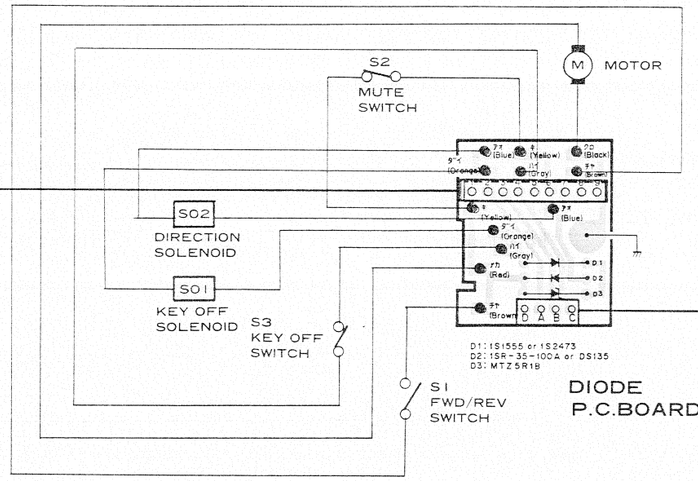
B

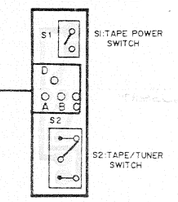
C

D

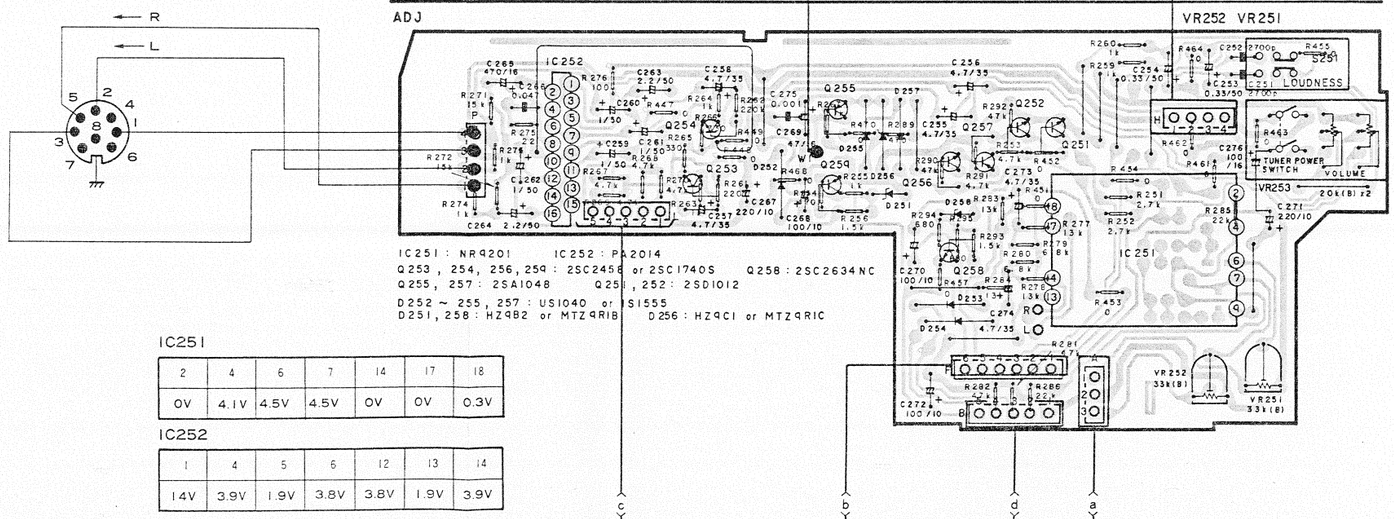








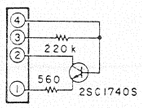
	Q253	Q254	Q258
B	1.5V	1.5V	
C	2.7V	2.7V	14.2V
E	0.8V	0.8V	8.3V



IC251						
2	4	6	7	14	17	18
0V	4.1V	4.5V	4.5V	0V	0V	0.3V

IC252						
1	4	5	6	12	13	14
1.4V	3.9V	1.9V	3.8V	3.8V	1.9V	3.9V

IB153, 154 : CWW-243



Q60 : 2SK163
Q155, 158 : 2SD601-YQ or 2SC2712-LG
4 : MA151WK
35-100A D158 : HZ7A D165 : US1040 or 1S1555
: KHD501 IC153 , 154 : HA13001P

Fig. 30

13. CABINET EXPLODED VIEW

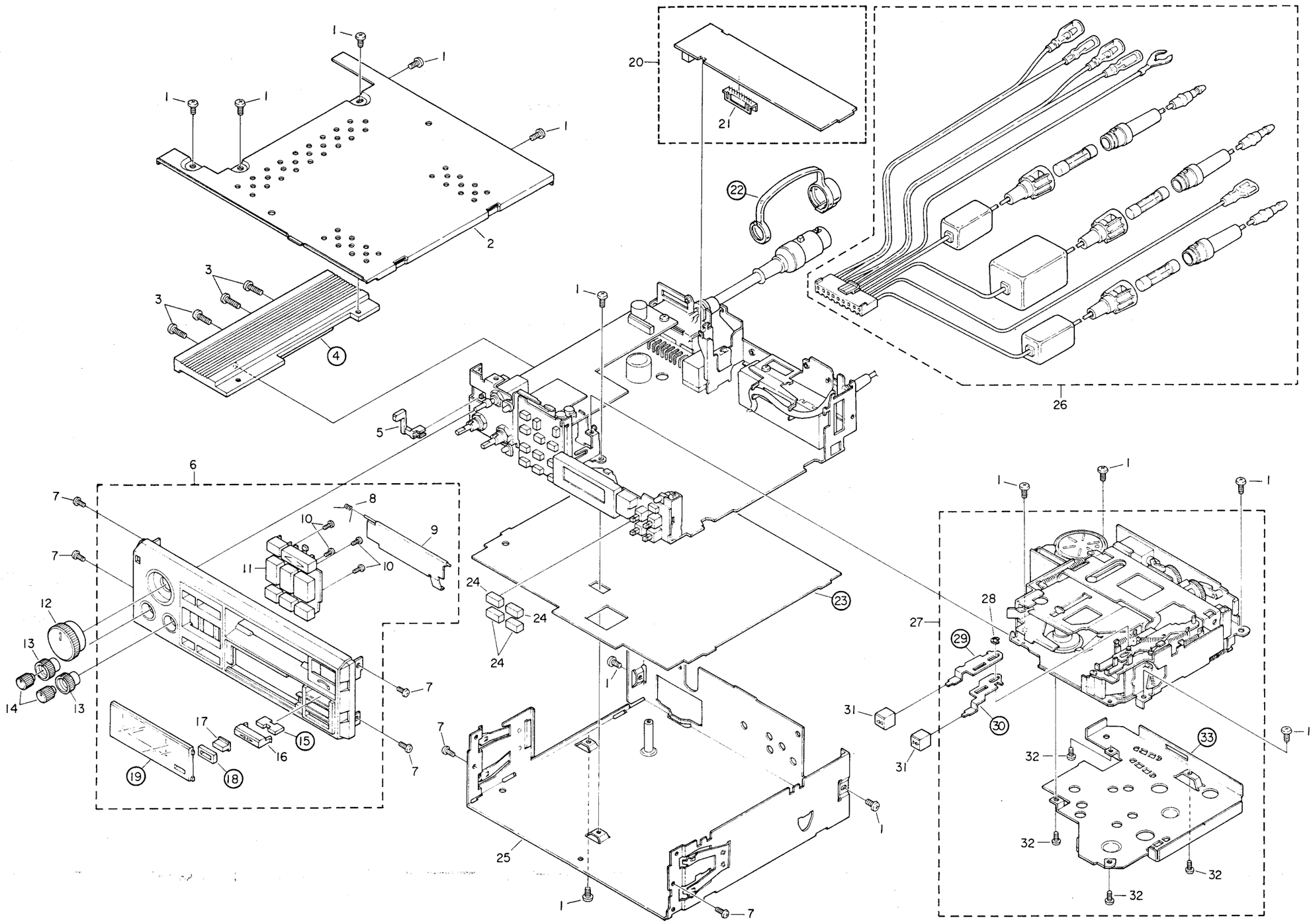


Fig. 31

- Parts List

NOTE:

- *For your parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★: GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts whose parts numbers are omitted are subject to being not supplied.*

Mark	No.	Part No.	Description
	1.	BMZ30P050FMC	Screw
	2.	CXD-532	Case Unit (KEH-8830SDK)
		CNB-863	Case (KEH-8830, 8800)
	3.	BMZ30P100FMC	Screw
	4.		Heat Sink
★	5.	CAC-925	Button (KEH-8830SDK)
		CAC-935	Button (KEH-8830, 8800)
	6.	CXD-528	Grille Assy (KEH-8830SDK)
		CXD-529	Grille Assy (KEH8830)
		CXD-534	Grille Assy (KEH-8800)
	7.	BMZ26P040FMK	Screw
	8.	CBH-875	Spring
	9.	CAT-210	Door (KEH-8830SDK, 8830)
		CAT-231	Door (KEH-8800)
	10.	BXZ14P045FZK	Screw
★	11.	CXD-524	Button Unit (KEH-8830SDK)
		CXD-525	Button Unit (KEH-8830)
		CXD-527	Button Unit (KEH-8800)
★	12.	CAA-579	Knob (KEH-8830SDK, 8830)
		CAA-599	Knob (KEH-8800)
★	13.	CAA-581	Knob (KEH-8830SDK, 8830)
		CAA-600	Knob (KEH-8800)
★	14.	CAA-580	Knob (KEH-8830SDK, 8830)
		CAA-601	Knob (KEH-8800)
	15.		Cushion
★	16.	CAC-923	Button (KEH-8830SDK, 8830)
		CAC-933	Button (KEH-8800)
★	17.	CAC-922	Button
	18.		Cushion
	19		Lens
	20.	CWM-289	SDK Unit (KEH-8830SDK)
	21.	CKS-275	Plug (KEH-8830SDK)
	22.		Cap
	23.		Insulator
★	24.	CAC-924	Button (KEH-8830SDK, 8830)
		CAC-934	Button (KEH-8800)
	25.	CXD-523	Chassis Unit (KEH-8830SDK)
		CXD-522	Chassis Unit (KEH-8830, 8800)
	26.	CDF-978	Cord Assy
	27.	CXK-750	Cassette Mechanism Assy
	28.	YE20FUC	Washer
	29.		Lever
	30.		Lever
★	31.	CAC-936	Button (KEH-8830SDK, 8830)
		CAC-992	Button (KEH-8800)
	32.	BMZ26P030FMC	Screw
	33.		Cover

Fig. 31

14. CHASSIS EXPLODED VIEW

- Parts List

Mark	No.	Part No.	Description
	1.	CWM-280	P.C.Board Unit (KEH-8830SDK)
		CWM-281	P.C.Board Unit (KEH-8830)
		CWM-282	P.C.Board Unit (KEH-8800)
	2.		Holder
	3.	NK60FMC	Nut
	4.	NK70FMC	Nut
★★	5.	CEL-166	Lamp, 14V 40mA
	6.	BMZ26P040FMC	Screw
★★	7.	CSG-211	Switch
	8.		P.C. Board
	9.	CDK-228	Connector
	10.	CDF-590	Connector
	11.	CKS-270	Plug
	12.	CKS-271	Plug
	13.	CKS-268	Plug
	14.	CKS-269	Plug
★★	15.	CSG-207	Switch
★★	16.	CCS-297	Volume/Switch
★★	17.	CCS-406	Volume, 50kΩ (B)
★★	18.	CCS-405	Volume, 50kΩ (G)
	19.	CDF-990	Connector
★★	20.	CEL-168	Lamp, 8V 60mA
	21.		Holder
	22.		Seat
★	23.	FTD-6147H	LCD (KEH-8830SDK,8830)
		FTD-6146H	LCD (KEH-8800)
	24.		Holder
★	25.	BG3422K	LED
★	26.	AA3422K	LED
	27.	CNL-720	P.C.Board
	28.		P.C. Board
★★	29.	CSG-248	Switch
★	30.	BG2222S-B1	LED
	31.	CDF-998	DIN Connector Cord
	32.	BMZ30P050FMC	Screw
	33.		Holder (KEH-8830SDK)
			Holder (KEH-8830,8800)
	34.	CDF-790	Connector
	35.	CDF-799	Connector
	36.	CDF-671	Connector
	37.	CDK-195	Connector (KEH-8830SDK)
	38.	CKS-466	Plug
	39.	CDF-660	Connector
	40.		Bracket
	41.	CDH-073	Antenna Cable
	42.	CDK-027	Cord (KEH-8830,8800)
	43.	CBL-230	Spring
	44.		Holder (KEH-8830SDK)
			Holder (KEH-8830,8800)
	45.	CWB-151	Front End
	46.	CDK-011	Connector
	47.	CDF-975	Connector
★★	48.	KHD501	IC
	49.	CNM-907	Spacer
	50.	CNF-387	Clamper
	51.	CDK-097	Cord

• Chassis

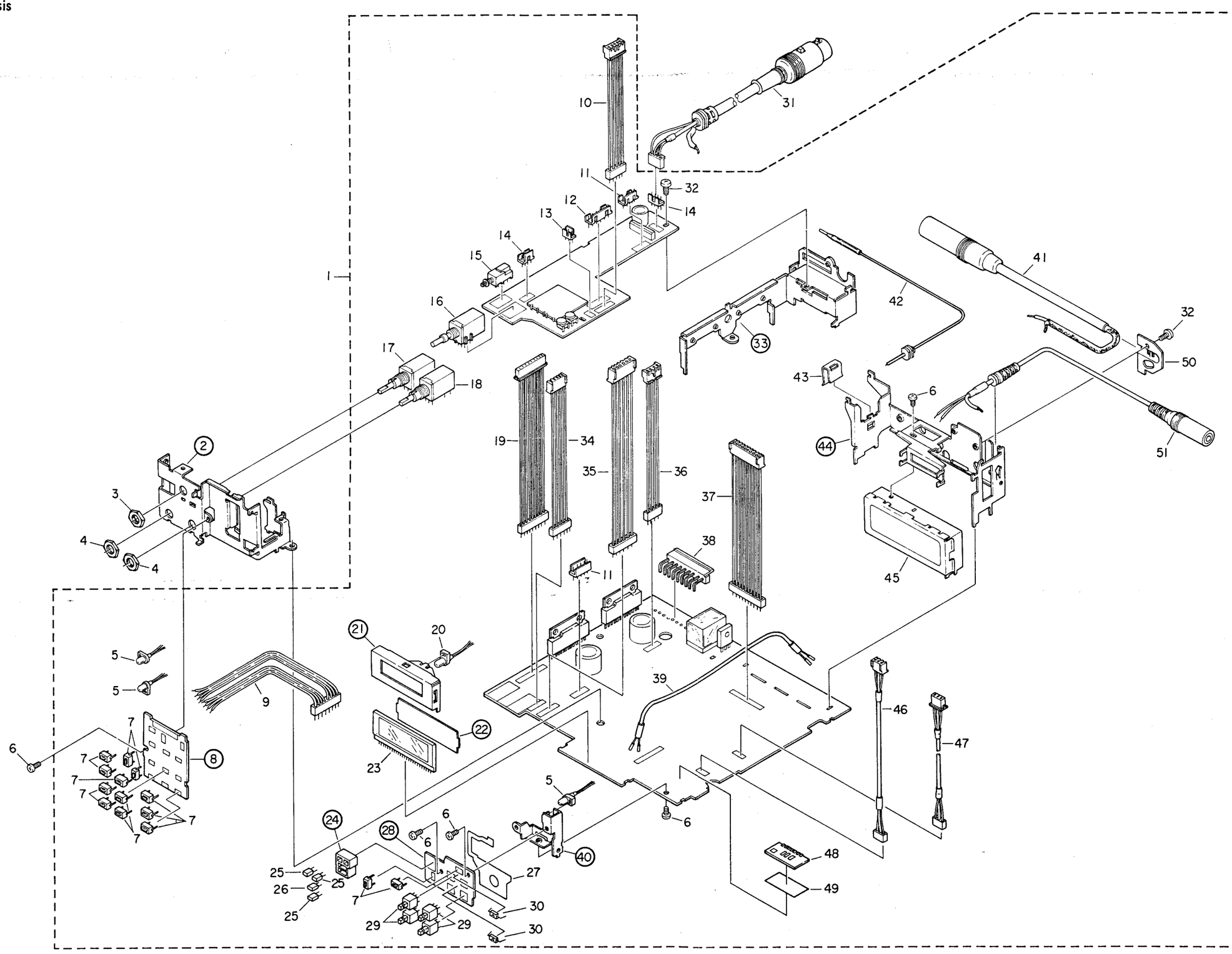


Fig. 32

15. ELECTRICAL PARTS LIST

NOTE:

When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	*56 X 10^1*	*561 ..... RD1/4PS* 5 6 1 *J*
47kΩ	*47 X 10^3*	*473 ..... RD1/4PS* 4 7 3 *J*
0.5Ω	*0R5*	*..... RN2H* 0 R 5 *K*
1Ω	*010*	*..... RS1P* 0 1 0 *K*

Ex. 2 When there are 3 effeictive digits (such as in high precision metal film resistors).

5.62kΩ 562 X 10^1 ..... RN1/4SR 5 6 2 1 *F*

- *For your parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★: GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts whose parts numbers are omitted are subject to being not supplied.*

P.C. Board Unit (CWM-280) KEH-8830SDK
P.C. Board Unit (CWM-281) KEH-8830
Consists of
Mother P.C. Board
Audio P.C. Board
Switch (A) P.C. Board
Switch (B) P.C. Board
LCD (FTD-6147H)
Front End (CWB-151)

P.C. Board Unit (CWM-280) KEH-8830SDK
P.C. Board Unit (CWM-281) HEH-8830

MISCELLANEOUS

Mark	Symbol & Description	Part No.
★★	IC1	PA0013
★★	IC2	PA0014
★★	IC3	PA0015
★★	*IC51	HA12434-A or HA12434-B
★★	IC101	PD4052 or PD4052A
★★	IC151	M51522AL
★★	IC152	KHD501
★★	IC153,IC154	HA13001P
★★	IC155	KHA108
★★	IC156	AN6540
★★	IC251	NR9201
★★	IC252	PA2014
★★	Q1,Q155,Q158 Chip Transistor	2SD601-YQ or 2SD601-YR or 2SD601-YS or 2SC2712-LG or 2SC2712-LL
★★	Q51–Q59,Q106,Q109–Q113, Q117,Q151–Q154,Q156,Q159, Q161,Q165,Q166,Q253,Q254, Q256,Q259	2SC2458 or 2SC1740S
★★	Q103,Q119,Q162–Q164 KEH-8830SDK only	2SC2458 or 2SC1740S
★★	Q60	2SK163
★★	Q101,Q102 Chip Transistor	2SB709-AQ or 2SB709-AR or 2SB709-AS or 2SA1179-M5 or 2SA1179-M6
★★	Q104 KEH-8830SDK only	2SA1048
★★	Q105,Q114,Q160,Q255,Q257	2SA1048
★★	Q107,Q108	2SA1150
★★	Q115,Q116	2SK330-Y
★★	Q118 KEH-8830SDK only	2SC2458
★★	Q157	2SD1207 or 2SC2236
★★	Q167,Q258	2SC2634NC
★★	Q251,Q252	2SD1012
★	D1,D2,D51–D53,D55-D58, D101,D105,D151–D153, D163,D165,D252–D255,D257	US1040 or 1S1555
★	D54	KV1235Z3-1 or KV1235Z3-2 or KV1235Z3-3 or KV1235Z3-4 or KV1235Z3-5 or KV1235Z5-A or KV1235Z5-B or KV1235Z5-C or KV1235Z5-D or KV1235Z5-E or KV1235Z5-F
★	D102 KEH-8830SKD only Chip Diode	MA151WA

Mark	Symbol & Description	Part No.
★	D103,D110,D131,D154 Chip Diode	MA151WK
★	D104,D106	HZ6A3 or MTZ5R6B
★	D107	HZ3A3 or HZ3B1
★	D108	HZ5A2 or MTZ4R7A
★	D109,D155 KEH-8830SDK only	US1040 or 1S1555
★	D111,D112 LED	BG2222S-B1
★	D156,D157	1SR-35-100A
★	D158	HZ7A or MTZ6R8 or HZ7B1
★	D159,D161,D162 LED	BG3422K
★	D160 LED	AA3422K
★	D164 KEH-8830SDK only	HZ6A2 or HZ6A3 or HZ6B1 or HZ6B2 or MTZ5R6
★	D251,D258	HZ9B2 or MTZ9R1B
★	D256	HZ9C1 or MTZ9R1C
	L1 Ferri-Inductor, 15μH	CTF-156
	L2 Ferri-Inductor, 2.7μH	CTF-155
	L51 Coil	CTB-149
	L52 Coil	CTB-167
	L53 Coil	CTB-164
	L54 Coil	CTB-165
	L55 Ferri-Inductor, 100μH	CTF-157
	T1 Coil	CTC-198
	T51,T52 Coil	CTB-150
	T53 AM Coil	CTE-139
	T54 Coil	CTE-140
	T55,T56 Coil	CTB-151
	IB153,IB154	CWW-243
	CR1	CWW-183
	CR2	CWW-182
	X101 Crystal Resonator	CSS-034
	RL1 Relay	CSR-042
	CF1 Ceramic Filter	CTF-182 or CTF-216
	CF51 Filter	CTF-100
	CF52 Filter	CTF-165
★★	IL102-IL104 Lamp,14V40mA	CEL-166
★★	IL105 Lamp, 8V 60mA	CEL-168
★★	VR1 Semi-fixed, 22kΩ(B)	CCP-247
★★	VR2 Semi-fixed, 1.5kΩ(B)	CCP-240
★★	VR3 Semi-fixed, 6.8kΩ(B)	CCP-348
★★	VR151 Volume, 50kΩ(B) (BASS/TREBLE)	CCS-406
★★	VR152 Volume, 50kΩ(G) (BALANCE/FADER)	CCS-405
★★	VR251,VR252 Semi-fixed, 33kΩ(B)	CCP-248
★★	VR253 Volume/Switch Volume, 20kΩ(B) (VOLUME/TUNER POWER)	CCS-297
★★	S101–S114 Switch	CSG-211
★★	S115–S118 Switch	CSG-248
★★	S251 Switch	CSG-207
★	LCD	FTD-6147H
	Front End	CWB-151

RESISTORS (KEH-8830SDK)

Mark	Symbol & Description	Part No.
	R7,R14,R19,R68,R88,R105, R106,R113,R134,R137,R161, R178,R183,R190,R206,R208, R296,R297	RD1/4PM□□□J
	*R77,R79, *R80	RD1/6VS□□□J
	R163,R191	RD1/2PS□□□JL
	R501,R502	RD1/4VM0R0J
	Other Resistors (Chip Resistor)	RS1/8S□□□J

RESISTORS (KEH-8830)

Mark	Symbol & Description	Part No.
	R7,R14,R19,R68,R88,R113, R134,R137,R161,R178,R183, R208	RD1/4PM□□□J
	*R77,R79,*R80	RD1/6VS□□□J
	R163,R191	RD1/2PS□□□JJ
	R501,R502	RD1/4VM0R0J
	Other Resistors (Chip Resistor)	RS1/8S□□□J

Caution:
*IC51 and resistors *R77 and *R80 used mutually in the following assembly.

IC51	R77	R80
HA12434-A	RD1/6VS821J	RD1/6VS561J
HA12434-B	RD1/6VS561J	RD1/6VS821J

CAPACITORS

Mark	Symbol & Description	Part No.
	C1,C30,C58,C77,C83,C109,C171, C197 Chip Capacitor	CKSYF154Z25
	C2,C53,C54,C60,C62–C64,C66, C67,C75 Chip Capacitor	CKSYF473Z50
	C3,C107,C169,C170,C175,C176	CEA4R7M35I

Mark	Symbol & Description	Part No.
	C4–C6,C11,C12,C51,C55,C59 C74,C79 Chip Capacitor	CKSYB223K50
	C7,C90	CEAR47M50LS2
	C8,C52,C84,C103,C110,C116,C209, C210 Chip Capacitor	CKSYB103K50
	C9,C15 Chip Capacitor	CCSSL101J50
	C10,C161,C263,C264	CEA2R2M50LS2
	C13,C16,C104,C159,C162,C195	CEA100M25LS
	C14,C81,C198,C259–C262	CEA010M50LS2
	C17,C165–C168	CEA4R7M35NPLL
	C18,C119,C120,C151,C152, C173,C174 Chip Capacitor	CKSYB681K50
	C19,C89,C118,C160,C200	CEA220M16LS
	C20,C21,C68,C113,C155, C156,C164,C199,C207,C269	CEA470M16LS
	C22	CQEA183J50
	C23,C117	CSZA010M25
	C24	CSZA1R5M25
	C25	CSZA2R2M25
	C26	CQSAH102J50
	C27–C29 Chip Capacitor	CKSYB822K50
	C56 Chip Capacitor	CKSYB332K50
	C57,C267,C271	CEA221M10L2
	C61 Chip Capaicor	CCSSH090D50
	C65 Chip Capacitor	CCSSH100D50
	C69 Chip Capacitor	CCSCH680J50
	C70	CCDRH560J50L
	C71 Chip Capacitor	CCSCH330J50
	C72	CQPA331G100
	C73 Chip Capacitor	CCSUJ100D50
	C76	CCDSH430J50L
	C78,C80,C85,C91,C112, C201–C205 Chip Capacitor	CKSYF473Z50
	C82,C114,C115	CSZA100M16
	C86,C157,C158 Chip Capacitor	CKSYB223K50
	C87,C253,C254	CEAR33M50LS2
	C88,C163	CEA3R3M50LS
	C101 Chip Capacitor(KEH-8830SDK)	CKSYB103K50
	C102 Chip Capacitor(KEH-8830SDK)	CKSYB102K50
	C105 (KEH-8830SDK)	CEA4R7M35LS
	C106,C108 Chip Capacitor	CCSSH090D50
	C111,C275 Chip Capacitor	CKSYB102K50
	C153,C154	CEANL4R7M35LL
	C172,C177–C184,C268	CEA101M10L2
	C185–C188	CQMA104J50L
	C189,C190	CQMA102J50L
	C193,C194 2200μF/16V	CCH-058
	C196 (KEH-8830SDK)	CEA471M16L2
	C196 (KEH-8830)	CEA221M16L2
	C206,C208,C266 Chip Capacitor	CKSYF473Z50
	C251,C252 Chip Capacitor	CKSYB272K50
	C255–C258,C273,C274	CEA4R7M35LS
	C265	CEA471M16L2
	C270,C272	CEA101M10L2
	C276	CEA101M16L2

Front End (CWB-151)

MISCELLANEOUS

Mark	Symbol & Description		Part No.
★★	IC1		CWW-173
★★	IC2		PA4009-A
★★	*Q1		P003-A or P003-B
★★	Q2		2SC2753 or 2SC2570
★★	Q3		2SK241-GR
★	D1–D3		KV1310-6
	L1	Coil	CTC-189
	L2	Coil	CTC-190
	L3	Coil	CTC-191
	L4	Chip Inductor	CTF-185
	L5	Chip Inductor	CTF-186
	CF1,CF2	Ceramic Filter	CTF-182
	CT2		CCG-098
	T1	Transformer	CTC-186
	T2	IF Transformer	CTC-187

RESISTORS

Mark	Symbol & Description	Part No.
	R1,R2,R4–R11,R14 Chip Resistor	RS1/8S□□□J
	*R3,R12,R13	RD1/6PS□□□J

Caution:
Transistor *Q1 and resistor *R3 used mutually in the following assembly.

Q1	R3
P003-A	RD1/6PS473J
P003-B	RD1/6PS393J

CAPACITORS

Mark	Symbol & Description		Part No.
	C1	Chip Capacitor	CCSSH220J50
	C2	Chip Capacitor	CCSSH390J50
	C3	Chip Capacitor	CCSCH080D50
	C4,C5,C11,C15,C20	Chip Capacitor	CKSYB222K50
	C6	Chip Capacitor	CCSCH040C50
	C7,C10	Chip Capacitor	CKSYB103K50
	C8	Chip Capacitor	CCSCH050C50
	C9	Chip Capacitor	CCSSH560J50
	C12,C18	Chip Capacitor	CCSTH150J50
	C13	Chip Capacitor	CCSTH330J50
	C14	Chip Capacitor	CCSTH120J50
	C16,C19,C21	Chip Capacitor	CKSYF223Z50
	C17	Chip Capacitor	CCSUJ080D50
	C22		CEA2R2M35LS
	C23		CEA3R3M25LS

SDK Unit (CWM-289) KEH-8830SDK

MISCELLANEOUS

Mark	Symbol & Description		Part No.
★★	IC301		S0280
★★	IC302		TA75558P
★★	IC303		S551
★★	Q301–Q304,Q308,Q309		2SC2458 or 2SC1740S
★★	Q305		2SC1740S
★★	Q306		2SA1048
★★	Q307		2SK30A-O
★	D301		US1040 or 1S1555 or DS442 or 1S2473
★	D302	Chip Diode	MA151WA
★	D303,D304,D306		1S2473VH
★	D305,D307	Chip Diode	MA151WK
	L301,L302	Coil	CTF-125
	CF301	Ceramic Resonator	CTF-109
★★	VR301	Semi-fixed 4.7kΩ(B)	CCP-243

RESISTORS

Mark	Symbol & Description	Part No.
	R302,R325	RD1/4PM□□□J
	Other Resistors (Chip Resistor)	RS1/8S□□□J

CAPACITORS

Mark	Symbol & Description		Part No.
	C301,C324,C325	Chip Capacitor	CKSYB391K50
	C302,C308	Chip Capacitor	CKSYB103K50
	C303		CEA0R1M50LS2
	C304,C322,C323		CEA220M16LS
	C305		CEAR33M50LS2
	C306		CQSAH151J50
	C307	Chip Capacitor	CKSYB223K25
	C309,C312		CCDLH680J50L
	C310,C313		CQSAH102J50
	C311		CCDLH120J50L
	C314		CQMA333J50
	C315		CQMA103J50
	C316		CEA010M50LS2
	C317,C320		CEA100M25LS
	C318	Chip Capacitor	CKSYB102K50
	C319,C326		CKPYY223N16
	C321	Chip Capacitor	CKSYF104Z25
	C327		CEA101M16L2

P.C. Board Unit (CWM-282) KEH-8800
Consists of
Mother P.C. Board
Audio P.C. Board
Switch (A) P.C. Board
Switch (B) P.C. Board
LCD (FTD-6146H)
Front End (CWB-151)

P.C.Board Unit (CWM-282) KEH-8800

MISCELLANEOUS

Mark	Symbol & Description		Part No.
★★	IC1		PA0013
★★	IC2		PA0014
★★	IC3		PA0015
★★	*IC51		HA12434-A or HA12434-B
★★	IC101		PD4052 or PD4052A
★★	IC151		M51522AL
★★	IC152		KHD501
★★	IC153,IC154		HA13001P
★★	IC155		KHA108
★★	IC156		AN6540
★★	IC251		NR9201
★★	IC252		PA2014
★★	Q1,Q155,Q158	Chip Transistor	2SD601-YQ or 2SD601-YR or 2SD601-YS or 2SC2712-LG or 2SC2712-LL
★★	Q51,Q52,Q58,Q59,Q109,Q117, Q151–Q154,Q156,Q159,Q161, Q165,Q166,Q253,Q254,Q256, Q259		2SC2458 or 2SC1740S
★★	Q60		2SK163
★★	Q101,Q102	Chip Transistor	2SB709-AQ or 2SB709-AR or 2SB709-AS or 2SA1179-M5 or 2SA1179-M6
★★	Q105,Q114,Q160,Q255,Q257		2SA1048
★★	Q107,Q108		2SA1150
★★	Q116		2SK330-Y
★★	Q157		2SD1207 or 2SC2236
★★	Q167,Q258		2SC2634NC
★★	Q251,Q252		2SD1012
★	D1,D2,D51–53,D55–D58, D105,D151–D153,D163,D165, D252–D255,D257		US1040 or 1S1555
★	D54		KV1235Z3-1 or KV1235Z3-2 or KV1235Z3-3 or KV1235Z3-4 or KV1235Z3-5 or KV1235Z5-A or KV1235Z5-B or

Mark	Symbol & Description		Part No.
			KV1235Z5-C or KV1235Z5-D or KV1235Z5-E or KV1235Z5-F
★	D103,D110,D154	Chip Diode	MA151WK
★	D104,D106		HZ6A3 or MTZ5R6B
★	D107		HZ3A3 or HZ3B1 or MTZ3R3B
★	D108		HZ5A2 or MTZ4R7A
★	D111,D112 D156,D157 D158	LED	BG2222S-B1 1SR-35-100A HZ7A or
★	D159,D161,D162	LED	MTZ6R8 or HZ7B1 BG3422K
★	D160	LED	AA3422K
★	D251,D258		HZ9B2 or
★	D256		MTZ9R1B HZ9C1 or MTZ9R1C
	L1	Ferri-Inductor,15μH	CTF-156
	L2	Ferri-Inductor,2.7μH	CTF-155
	L51	Coil	CTB-149
	L52	Coil	CTB-167
	L53	Coil	CTB-164
	L55	Ferri-Inductor,100μH	CTF-157
	T1	Coil	CTC-198
	T51,T52	Coil	CTB-150
	T53	AM Coil	CTE-139
	T54	Coil	CTE-140
	IB153,IB154		CWW-243
	CR1		CWW-183
	CR2		CWW-182
	X101	Crystal Resonator	CSS-034
	RL1	Relay	CSR-042
	CF1	Ceramic Filter	CTF-182 or CTF-216
	CF51	Filter	CTF-100
	CF52	Filter	CTF-165
★★	IL102–IL104	Lamp,14V40mA	CEL-166
★★	IL105	Lamp, 8V60mA	CEL-168
★★	VR1	Semi-fixed,22kΩ(B)	CCP-247
★★	VR2	Semi-fixed, 1.5kΩ(B)	CCP-240
★★	VR3	Semi-fixed, 6.8kΩ(B)	CCP-348
★★	VR151	Volume,50kΩ(B) (BASS/TREBLE)	CCS-406
★★	VR152	Volume, 50kΩ(G) (BALANCE/FADER)	CCS-405
★★	VR251,VR252	Semi-fixed, 33kΩ(B)	CCP-248
★★	VR253	Volume/Switch Volume, 20kΩ(B) (VOLUME/TUNER POWER)	CCS-297
★★	S101–S114	Switch	CSG-211
★★	S115–S118	Switch	CSG-248
★★	S251	Switch	CSG-207
★	LCD		FTD-6146H
	Front End		CWB-151

RESISTORS

Mark	Symbol & Description	Part No.
	R7,R14,R19,R88,R113,R134, R137,R161,R178,R183,R208	RD1/4PM□□□J
	*R77,R79,*R80	RD1/6VS□□□J
	R163,R191	RD1/2PS□□□JL
	R501,R502	RD1/4VM0R0J
	Other Resistors (Chip Resistor)	RS1/8S□□□J

Caution:
*IC51 and resistors *R77 and *R80 used mutually in the following assembly.

IC51	R77	R80
HA1234-A	RD1/6VS821J	RD1/6VS561J
HA1234-B	RD1/6VS561J	RD1/6VS821J

CAPACITORS

Mark	Symbol & Description	Part No.
	C1,C30,C58,C77,C83,C171,C197 Chip Capacitor	CKSYF154Z25
	C3,C53,C54,C62,C64,C67 Chip Capacitor	CKSYF473Z50
	C2,C107,C169,C170,C175,C176	CEA4R7M35LS
	C4–C6,C11,C12,C51,C55,C59, C74,C79 Chip Capacitor	CKSYB223K50
	C7,C90	CEAR47M50LS2
	C8,C52,C84,C103,C110,C116, C209,C210 Chip Capacitor	CKSYB103K50
	C9,C15, Chip Capacitor C10,C161,C263,C264 C13,C16,C159,C162,C195 C14,C81,C198,C259–C262 C17,C165–C168	CCSSL101J50 CEA2R2M50LS2 CEA100M25LS CEA010M50LS2 CEA4R7M35NPLL
	C18,C119,C120,C151,C152,C173, C174 Chip Capacitor	CKSYB681K50
	C19,C89,C118,C160,C200	CEA220M16LS
	C20,C21,C68,C113,C155,C156, C164,C199,C207,C269	CEA470M16LS
	C22	CQEA183J50
	C23	CSZA010M25
	C24	CSZA1R5M25
	C25	CSZA2R2M25
	C26	CQSAH102J50
	C27–C29 Chip Capacitor	CKSYB822K50
	C56 Chip Capacitor	CKSYB332K50
	C57,C267,C271	CEA221M10L2
	C61 Chip Capacitor	CCSSH090D50
	C65 Chip Capacitor	CCSSH100D50

Mark	Symbol & Description		Part No.
	C69	Chip Capacitor	CCSCH680J50
	C70		CQPA431G100
	C73	Chip Capacitor	CCSUJ150J50
	C80,C85,C91,C112,C201–C205	Chip Capacitor	CKSYF473Z50
	C82,C114,C115		CSZA100M16
	C86,C157,C158	Chip Capacitor	CKSYB223K50
	C87,C253,C254		CEAR33M50LS2
	C88,C163		CEA3R3M50LS
	C106,C108	Chip Capacitor	CCSCH090D50
	C111,C275	Chip Capacitor	CKSYB102K50
	C153,C154		CEANL4R7M35LL
	C172,C177–C184,C268		CEA101M10L2
	C185–C188		CQMA104J50L
	C189,C190		CQMA102J50L
	C193,C194	2200μF/16V	CCH-058
	C196		CEA221M16L2
	C206,C208,C266	Chip Capacitor	CKSYF473Z50
	C251,C252	Chip Capacitor	CKSYB272K50
	C255–C258,C273,C274		CEA4R7M35LS
	C265		CEA471M16L2
	C270,C272		CEA101M10L2
	C276		CEA101M16L2

Diode P.C. Board

Mark	Symbol & Description	Part No.
★	D1	1S1555 or 1S2473
★	D2	1SR-35-100A or DS135
★	D3	MTZ5R1B

Switch P.C. Board

Mark	Symbol & Description		Part No.
★★	S1	Switch (TAPE POWER)	CSN-094
★★	S2	Switch (TAPE/TUNER)	HSK-126

Miscellaneous Parts List

Mark	Symbol & Description		Part No.
★★	HD1	Head Unit	CXD-421
★★	M	Motor	CXM-114
★	SO1	Solenoid (KEY OFF)	CXP-043
★	SO2	Solenoid (DIRECTION)	CXP-044
★★	S1	Switch (FWD/REV)	CSN-094
★★	S2	Switch (MUTE)	CSN-084
★★	S3	Switch (KEY OFF)	CSN-090

16. PACKING METHOD

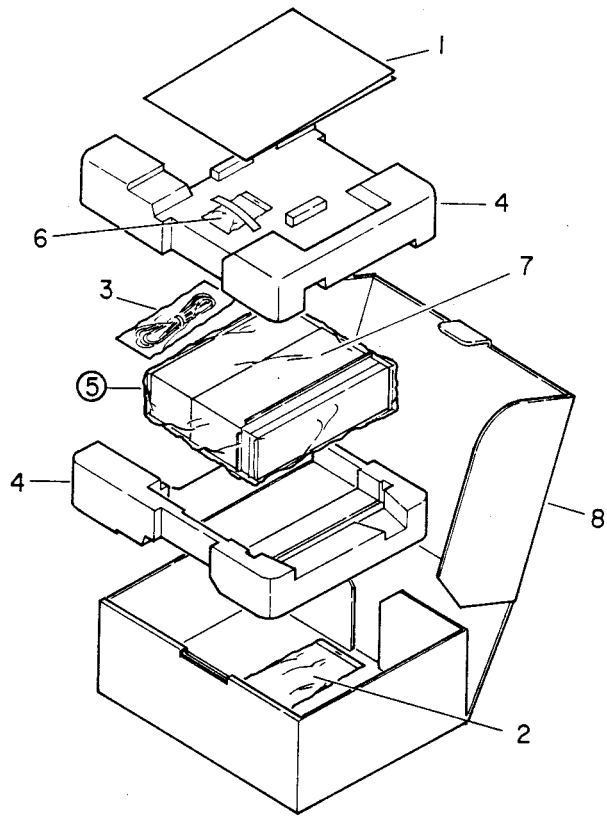


Fig. 33

• Parts List

Mark	No.	Part No.	Description
	1.	CRD-525	Owner's Manual (KEH-8830SDK) (German French)
		CRD-523	Owner's Manual (KEH-8830, 8800) (English, French, German, Spanish)
		CRD-524	Owner's Manual (KEH-8830) (Swedish, Norwegian, Dutch)
		CRB-506	Owner's Manual (KEH-8800) (Arabic)
			Card (KEH8830SDK, 8830)
			Card (KEH-8830SDK)
			Card (KEH-8830SDK)
	2.	CEA-885	Accessory Kit
	2-1.	CDE-437	Cord
	2-2.	CNF-111	Strap
	2-3.	CNF-382	Lever
	2-4.	CNW-642	Holder
	2-5.		Screw Kit
	2-5-1.	CBA-028	Screw for Strap
	2-5-2.	NF40FMC	Nut
	2-5-3.	NF50FMC	Nut
	2-5-4.	PMB50Y160FMC	Screw
	2-5-5.	WS40FMC	Washer
	3.	CDF-978	Cord Assy
	4.	CHD-900	Styrofoam (KEH-8830SDK)
		CHD-870	Styrofoam (KEH-8830, 8800)
	5.		Cover
	6.		Accessory Kit (KEH-8830SDK, 8830)
			Accessory Kit (KEH-8800)
	6-1.	CBH-865	Spring
	6-2.	CNK-257	Holder (KEH-8830SDK, 8830)
		CNK-258	Holder (KEH-8800)
	7.	CNG-505	Holder
	8.	CHD-912	Carton (KEH-8830SDK)
		CHD-910	Carton (KEH-8830)
		CHD-908	Carton (KEH-8800)